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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
New Trend for Ambitious Youngsters
Hm-m-m
Capitalizing on Human Nature
Wholesale Brainstorming

Stories of the Week

Two queers were walking down the street behind a quarrelling man and wife. Latter's infield-practice insults turned into violent abuse.

"See," said one of the fags, "those mixed marriages never work out well."

Arthur "Red" Motley, President of *Parade* magazine told that story to an industrialist and his wife at a dinner one evening. The man laughed heartily; the wife didn't even smile.

Motley figured he had committed a breach of etiquette until:

"You didn't get the point, did you, dear?" the industrialist patted his wife on the knee.

"No."

"Queers, dear, are fairies."

"You mean," she hesitated, "elves?"

On his 108th birthday Civil War veteran William Allen Lundy (he "fit for the South, suh") revealed his recipe for longevity:

"Mind your own business, keep away from doctors, and look at pretty girls."

"How're you making out with your daily family budget?"

"We're saving money," sighed Gretchen unhappily. "By the time we get it figured out, it's too late for Bob and me to go out anywhere."

New Trend for Ambitious Youngsters

A good way to write a help-wanted advertisement may be to buck the current trend toward offering more and more fringe benefits and to concentrate on opportunity and hard work, the American Management Association reports.

AMA cites the case of a Cleveland company which ran the following ad:

> Opportunity for hard-working young man ready to start at the bottom and, by initiative and self-reliance, work his way up as far as his ability and determination permit.

Within 24 hours the job was

(Concluded on Page 16, Col. 1)

Contractor Pay To Union Joint Boards Denied

Supreme Court Halts Employe Benefit Pay

SAN FRANCISCO—It is illegal, the U. S. Supreme Court has ruled, for contractors to pay money to *union* joint industry boards for the benefit of their employes.

When the Supreme Court denied a motion to review last month it in effect made the Sept. 16, 1957, opinion of the U. S. court of appeals for the 9th circuit here the law of the land.

The decision apparently does not affect joint industry boards whose funds are deposited in trust and are actually jointly administered by employer association and union, as is the case in New Jersey's RACCA-UA board and others modeled after it.

Title of the case is Sheet Metal Contractors Association

(Concluded on Page 33, Col. 1)

NLRB May Now Cite Certain Unions In Jurisdiction Fights

NEW YORK CITY—Adding teeth to the cogs of its machinery for barring jurisdictional strikes, the National Labor Relations Board by unanimous decision will revise rules on certain unfair labor practice complaints.

A major policy shift will now permit these complaints in certain cases without the prior necessity of a hearing to determine the merits of a dispute.

To apply in industries such as the building trades in which joint machinery has been set up to settle jurisdictional rows without work stoppages, an unfair labor practice citation could be handed down by NLRB in strikes called in anticipation of an adverse award or in protest against such an award. In

(Concluded on Page 33, Col. 2)

M-H Meets with UA, Settles Labor Row

SAN FRANCISCO — Labor dispute involving eight instrument servicemen who have been picketing Minneapolis-Honeywell Regulator Co. here was settled in Washington, D. C.

U. A. general officers set up the meeting, attended by M-H personnel representatives, and by Joe Mazzola of U. A. Local 38 here with two of the strike-bound instrument men.

Branch Manager R. C. Cushing here said both sides gave a little to gain the settlement.

(Concluded on Page 33, Col. 1)

ASHAE and ASRE To Continue Merger Study

By C. Dale Mericle

PITTSBURGH — Study will continue on a method of merging the American Society of Heating & Air-Conditioning Engineers and the American Society of Refrigerating Engineers, it was announced here in a joint statement during the 64th annual meeting of ASHAE.

Councils of both societies gave unanimous approval for continued study of merger plans by the joint ASHAE-ASRE Committee on Cooperation.

The ASRE council held a special meeting here Jan. 26.

Report of the committee will be presented to membership of both societies at regional and sectional meetings during the coming months, it was also announced.

If subsequent reports of the joint committee are approved by the councils of both groups, the proposed method of merger will

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Kennard Purchase Completed by AAF

LOUISVILLE, Ky. — American Air Filter Co., Inc. has formally completed, through an exchange of common stock, the acquisition of Kennard Corp., St. Louis manufacturer of heating and cooling coils, and heating, ventilating, and cooling units.

AAF President W. G. Frank, in announcing the transaction, revealed that American Air Filter acquired 83,525 shares of Kennard common stock, in return for 20,046 shares of AAF common stock.

Net worth of Kennard at the close of its last fiscal year was $986,000. Total current assets were listed at $1,298,000, with current liabilities of $509,000.

(Concluded on Page 33, Col. 3)

Typhoon Shows '58 Heat Pumps

ST. PETERSBURG BEACH, Fla.—Some 200 dealers, sales representatives, and utility executives attending the sixth annual heat pump school held recently at the Desert Ranch, Typhoon Heat Pump Co. of Hupp Corp., viewed the firm's 1958 line.

The new models include four types—air-to-air, water-to-air, water-to-water, air-to-water, and water chillers in sizes from 2 to 50 tons. They are:

Water-to-air models: "A completely new concept in a low-cost AH line using decorator fronts in color and offering new flexibility in installation. Also a new version of larger sizes—10 to

(Concluded on Page 25, Col. 3)

DROPS FILTER SIZING

FHA Revises ME-13 Covering Summer Home Conditioning

WASHINGTON, D. C.—Federal Housing Administration has extensively revised its Mechanical Engineering bulletin ME-13, which it issued last August to spell out its summer air conditioning requirements.

The revision was published Jan. 10 at ME-13-A by Neil A. Connor, director of FHA's architectural standards division.

All changes become effective immediately except one. That is the requirement concerning the use of dielectric connectors—mentioned in paragraph 6 below—which takes effect April 10—90 days after publication of the new bulletin.

Among the more significant changes are:

1. ME-13-A states specifically what type of equipment it covers and what it does not cover.

Covered is all residential mechanical or absorption summer air conditioning equipment. Excluded are evaporative or desert type coolers.

2. ME-13-A drops requirements for filter sizing and for

(Concluded on Page 25, Col. 1)

* * *

FHA Spells Out Attitude on Room Units

WASHINGTON, D. C.—Federal Housing Administration's attitude toward window units as eligible for inclusion in FHA insured loans on new homes was spelled out in a memo issued by Neil A. Connor, director of architectural standards division, that accompanied the new ME-13-A.

The memo pointed out that "single or multiple installations of room air conditioners in windors, walls, or as consoles, may be considered eligible where acceptable to the mortgagee and otherwise determined suitable by the FHA insuring office.

"Window type room air conditioners, due to their introduction and sale as appliances, generally have lacked an appropriate integration with other build-

(Concluded on Page 33, Col. 3)

'Amazing Support' Given Home Heating Modernizing Drive

MINNEAPOLIS — Project Warm Hearted House, a nationwide home heating modernization program launched last November by Minneapolis-Honeywell Regulator Co., has received amazing support from the heating industry, declares K. L. Wilson, Honeywell vice president.

"If the heating industry has been somewhat apathetic in the past, as some critics have charged," Wilson asserted, "the amazing support of Project Warm Hearted House proves that today the entire industry is prepared to do an aggressive job of awakening homeowners to the shortcomings of their present heating systems."

More than 10,000 dealers have signed up to participate in the project, he said. Approximately

(Concluded on Page 32, Col. 4)

Two Dealers Analyze Heating Market, Sell Quality Systems

QUALITY SYSTEMS can be sold to both the builder and the owner of an existing home if the dealer will analyze his market and merchandise his product properly, advises Charles C. Owen, field sales manager for Janitrol. To prove his point Owen tells how two dealers do just this in the Heating Section starting on page 30 of this issue.

Make Your FIRST CHOICE

READING
COPPER TUBING

Made by
Copper Tube SPECIALISTS

And
RED BRASS
PIPE

SECOND to NONE
for Refrigeration &
Air Conditioning Equipment

READING TUBE CORPORATION
EMPIRE STATE BUILDING NEW YORK 1, N. Y.
WORKS: READING, PA.

B.t.u.h. Capacity

ARI Adopts 6 Recommendations for '58 Publications of Room Unit Ratings

WASHINGTON, D. C.—Publication of room air conditioner capacity ratings in British thermal units per hour (B.t.u.h.) will be continued this year.

Plans for the 1958 publication program will be completed Feb. 9-11 at a New Orleans meeting of the Room Air Conditioner Section, and its executive committee, of Air-Conditioning & Refrigeration Institute.

It was voted last September at a section meeting to carry on the program, initiated in 1957, of publishing ratings of all models in terms of B.t.u.h. in accordance with ARI Standard 110-56.

In voting to extend the program as applied to 1958 units, the room unit section adopted these recommendations:

That participating manufacturers file their B.t.u.h. ratings on production units promptly; that, for each production model, the deadline for publishing the rating will be 30 days after tests are completed, or in any event, not later than 30 days after units of this model are shipped from the factory.

That not later than 30 days after filing of a B.t.u.h. rating, the rating be issued by ARI; that the ARI chief engineer and the Room Air Conditioner Section's engineering committee work out a formula showing probable ranges for various sizes, including B.t.u.h. ratings, horsepower, and running current.

That the ARI staff be authorized to look at each rating as it is received and if it appears to be outside the probable range or questionable for other reasons, Electrical Testing Laboratories be instructed to buy on the open market, a unit or units of this model to test such unit or units; that ARI immediately publish the results of all tests made by ETL as outlined above.

May 5-7 is the date set by ARI for its annual meeting in the Homestead at Hot Springs, Va. Product sections will convene at the session.

Florida U

Schedules 9th Annual Conditioning Conclave

GAINESVILLE, Fla. — The 9th Annual Air Conditioning Conference will be held at the University of Florida here Feb. 6 and 7, according to F. M. Flanigan of the Mechanical Engineering Dept. and supervisor of the conference.

The conference is open to the general public and particularly to those engaged in the air conditioning or allied business.

The program will cover such subjects as high temperature, high pressure heating; large custom-built heat pump installations; temperature measurement, insulation; air conditioning controls; and other subjects.

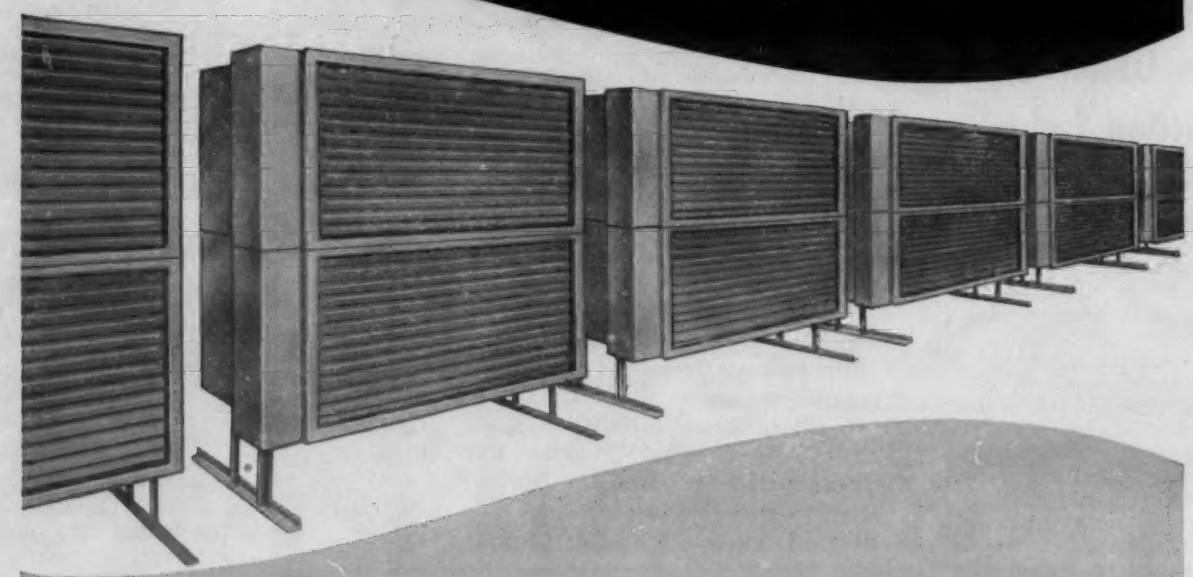
All of the sessions will be held in Room 512 in the Engineering & Industries building at the university. Registration fee for the entire conference has been set at $5.

N.Y. ASRE Meets at Typhoon Plant Feb. 3

BROOKLYN—The New York Chapter of the American Society of Refrigerating Engineers will hold a meeting Feb. 3 at the plant of Typhoon Air Conditioning Co., division of Hupp Corp., 505 Carroll St. here.

The program will begin with a tour of plant facilities at 5:30 p.m. followed by a buffet supper. At the formal meeting, which begins at 7:30, Murray M. Kabili, Typhoon's vice president in charge of engineering, will speak on "Design, Selection, and Application of Air-Cooled Condensing Systems."

KRAMER
UNICON
for
UNLIMITED
TONNAGE



Kramer Unicon has brought a new era into the industry. With more than 20 years of unique practical experience and know-how in dry condensing, Kramer again offers new avenues of opportunity to the air conditioning and refrigeration industry.

Unicon now has no capacity limit. Standard Unicon systems up to 540 tons are now cataloged for the first time.

Unicons for heat pump applications are now also available with no horsepower limitations.

Kramer engineering and design has proven that the Unicon can move large volumes of air with extreme quietness.

Unicon has long proven by actual experience that it is free from fouling or corrosion and requires practically no maintenance.

The total operating weight per ton for Unicon is very low, resulting in minimum platform and reinforcement requirements.

Unicon space requirements are surprisingly small; a 300 ton system requires only 15' x 14' floor space and is 12' high.

WRITE FOR BULLETIN U-391

KRAMER TRENTON CO. • Trenton 5, N.J.
44 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

For more information about products advertised on this page use Information Center, page 26.

GUESS WE'VE BEEN HIDING OUR LIGHT UNDER A BUSHEL

Apparently the story of this highest capacity, smallest size compressor hasn't been heard by everyone in the industry.

This remarkable 24,000 BTU per hour compressor was developed over two years ago by the engineers at Bendix-Westinghouse and has had two full seasons of successful, dependable performance. Its compact shape and size take no more space than conventional 1 H.P. compressors.

While this major development has not been widely advertised, apparently the compressor speaks for itself. Seven of the leading air conditioning manufacturers have standardized on it for this coming season. These leaders prefer it because of its high capacity and excellent efficiency—24,000 BTU per hour and over 9 BTU per watt. It's the greatest *BTU per dollar* value to be found in the industry.

In the months ahead, you can expect more and more advanced developments like this from Bendix-Westinghouse. For we honestly believe we have an unusually capable group of engineering and manufacturing people.

In the meantime, if you are looking for ways to increase the capacity of your window or residential air conditioning systems, get the facts on our complete line of compressors.

Bendix-Westinghouse

EVANSVILLE, IND.

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio—Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.

For more information about products advertised on this page use Information Center, page 26.

AGA Studying 3 Gas Conditioners

NEW YORK CITY—Two experimental gas air conditioning units—the Swiss open cycle sorption system and the improved adsorption system—were demonstrated late in 1957 and a third—the free piston engine-compressor unit—will be shown early in 1958, Robert W. Otto, president of the American Gas Association stated recently.

The units—results of the AGA research program into gas air conditioning—are being demonstrated to interested manufacturers, Otto declared in a resume of gas industry activities for the past year.

He said that the gas industry doubled its research, development, and promotion activities in the field of gas air conditioning in 1957.

Frigidaire Appoints Gould Chief Engineer

DAYTON — Promotion of R. E. Gould to chief engineer of Frigidaire was announced recently by H. F. Lehman, general manager of the division and vice president of General Motors.

R. E. Gould

Gould, who joined Frigidaire in 1930, has been assistant chief engineer in charge of research and future products, and for the past six months has been acting chief engineer of the firm.

He succeeds J. L. Gibson, who became chief engineer in 1953. Gibson will continue on extended sick leave, Lehman said.

Carrier Distributors, Dealers Sail On 'Tropic Holiday Cruise'

NEW YORK CITY — More than 250 couples, Carrier Corp. distributors, dealers, and their wives, sailed recently for a 10-day "Tropic Holiday Cruise" aboard the Furness Lines' *Queen of Bermuda*.

The group, winners in a year-long sales-incentive program, sponsored by Carrier's Unitary Equipment Div., visited Port-au-Prince in Haiti, Kingston, Jamaica, and Havana, Cuba. The party, from every section of the U.S., sailed aboard the 580-ft. luxury liner, which was chartered by Carrier for the cruise.

Another group of winners will have a six-day Mexico City holiday in February.

SHELTER PROGRAM

If Adopted, Program To Construct Shelters Against Radioactive Fall-Out Might Be Boon To Industry

WASHINGTON, D. C.—When President Eisenhower recently turned down a request by Congressional leaders for a look at the secret Gaither report on the state of the nation's defenses, it did not necessarily mean that the rumored recommendations in this report — which might have a profound effect on the air conditioning industry — would not be considered in future planning.

When the existence of the report first became known late last year, those supposedly in the "know" declared that among the major recommendations in the report was one for a nationwide shelter program to protect civilians against atomic attack. Such a program would have a tremendous impact on the nation's economy generally, and specifically on the air conditioning industry.

If a nationwide system of shelters were approved as a civilian defense measure, the requirements for air treatment in such shelters could conceivably take an enormous amount of the industry's equipment.

The Gaither report was prepared by a team of prominent citizens directed to study the entire field of active and passive defense. The group originally was headed by H. Rowan Gaither, former head of the Ford Foundation. He later became ill and was replaced by two co-chairmen, William C. Foster, vice president of Olin Mathieson Chemical Corp., and Robert C. Sprague of the Sprague Electric Co.

Recommendations

Its recommendations reportedly call for a big increase in the nation's offensive power, but also recommended a nationwide system of shelters to be built during the next decade at a cost estimated to be about $22 billion.

These shelters would be designed to protect millions against radioactive fall-out, which air currents would carry over wide areas following an atomic explosion.

Recent stories in such leading newspapers as the *New York Times* have outlined the principal pros and cons of the shelter program generally as follows:

The proponents say:

Can the U.S. have a strong foreign policy if its people are left exposed to nuclear blast and fall-out?

Will any President dare risk forceful action, such as a "local war," if he knows that miscalculation may bring a hideous death to millions of his people.

In the opinion of Dr. Edward H. Teller, the developer of the hydrogen bomb, in an all-out war the side that can recover more quickly from nuclear attack will have the better chance of survival.

Therefore, Dr. Teller calls for shelters that would protect not only civilians but also reserves of food and other necessities. This country, he states, is better able than the Soviet Union to afford such shelters and reserve stocks.

Arguments Against

Principal arguments against the shelter program are these:

The cost, which would probably necessitate an unbalanced budget for several years, and possibly detract from other important Defense and foreign policy programs.

The impact of the program on the public's attitude generally —a fear that it might produce a "Maginot line mentality" of the type that led to the defeat of France in 1940.

A probability that the program would be criticized as favoring some areas and some sizes of communities.

HALSTEAD & MITCHELL ENGINEERS PROVE . . .

A 100-TON COOLING TOWER CAN BE QUIET

HERE ARE TWO, NEW LARGE SIZES ADDED TO HALSTEAD & MITCHELL'S COMPETITIVELY-PRICED EC COOLING TOWER LINE

THE EC LINE. The addition of the 80- and 100-ton capacity towers extends the range of the more-value-per-dollar EC line. All 12 models, 5 to 100 tons, have outstanding features never before offered in this price group.

These include increased corrosion resistance due to rugged, 14-gage steel cabinets (12-gage sumps on the largest sizes) —weatherized by application of Vinsynite, Vinyl Zinc, and Chlorinated Rubber coatings. Exclusively, H&M offers pressure-creosoted wetted deck surfaces with the industry's only 20-Year Guarantee against rotting or damage due to fungus attack. New, sealed fan bearings are lubricated for life. Gravity-type distributing pans reduce pumping head, and cut down windage losses. Sump water levels are automatically controlled by integral float valves.

QUIET. Large diameter, four-bladed, deep pitch fans are belt-driven at low speeds by special weather and splash-proof motors. The EC-80 and EC-100 are driven at speeds of only 400 and 450 RPM. They're really quiet! Twin fans and drives power the three largest sizes, and all fans are of zinc plated, chromate dipped mild steel.

EC Series Cooling Towers are available in capacities of 5 thru 100 tons in standard, factory assembled models, or as Take-Aparts (ECK Series) for difficult-to-get-at installations. Residential, direct-drive ECD Series, with all the custom features and also competitively priced, come in capacities of 2 thru 7½ tons. Call your nearest Halstead & Mitchell wholesaler for delivery and prices or write: *Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.*

WRITE FOR COMPLETE DETAILS

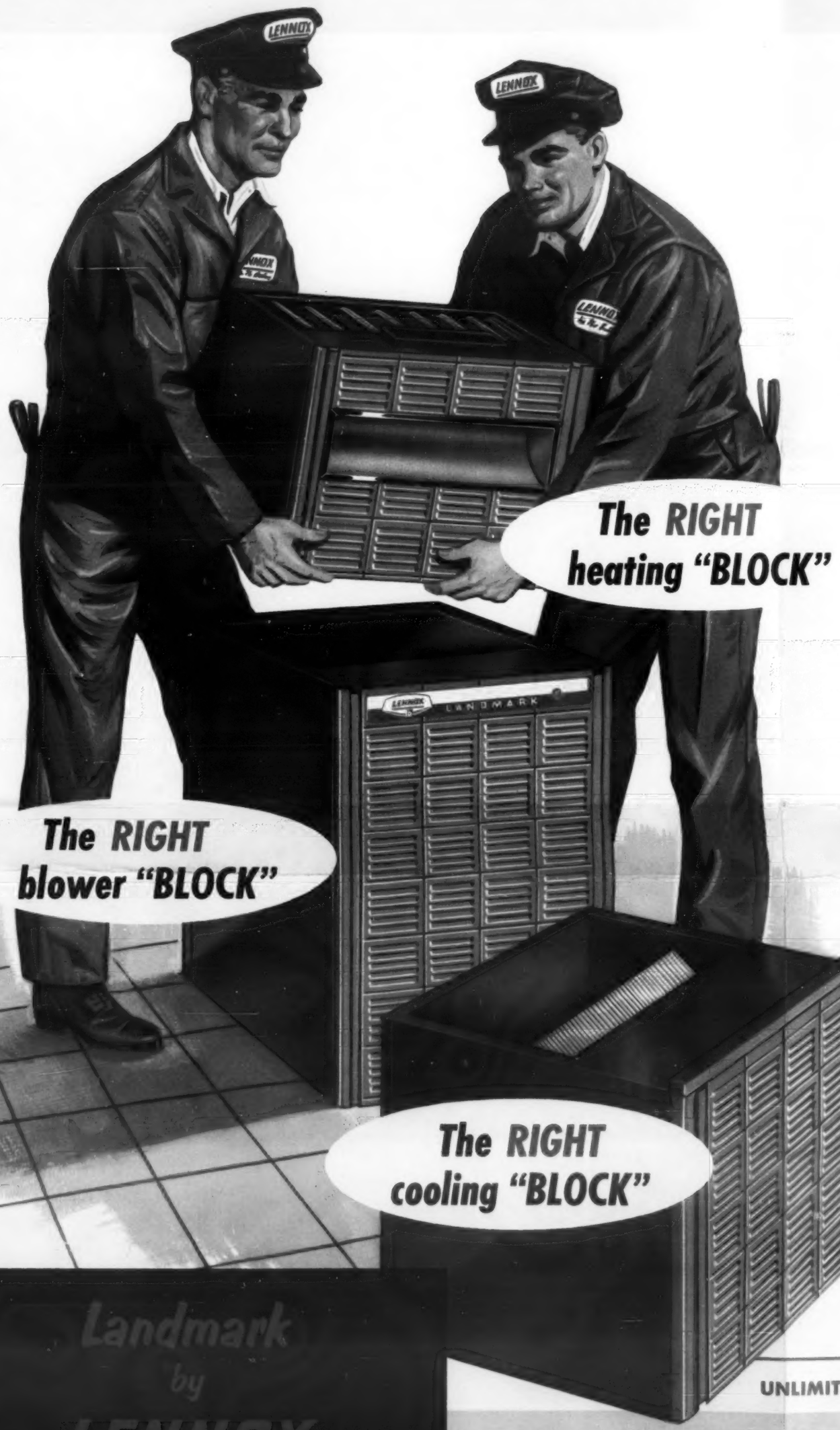
HM Halstead & Mitchell

For more information about products advertised on this page use Information Center, page 26.

Here it is! Dramatically different—inside and out!

Landmark by LENNOX®

THE *NEW* IDEA IN AIR CONDITIONING AND HEATING



Each "Block"... blower, cooling coil and heating section... sized to fit the heating and/or air conditioning job *EXACTLY*

It couldn't be simpler. All you do is choose the blower that has the proper Cfm capacities and add whatever your customers want. It's that easy.

And, if budget or personal preference rule out all-season comfort—you can provide either cooling or heating now, with the promise of making it a year 'round system at any later time—economically.

In addition to efficient air cooled air conditioning sections and both gas and oil heating sections in a wide variety of capacities, the "Landmark by Lennox" includes a *perfected* heat pump. This unit develops heating and cooling both quietly and efficiently. Also included in the line is an electric strip heater section to provide heat in areas where electricity is an economical fuel (or as a "booster" with a heat pump).

The "Landmark by Lennox" combinations are limitless—and so are the profit opportunities! Get the complete story . . . today.

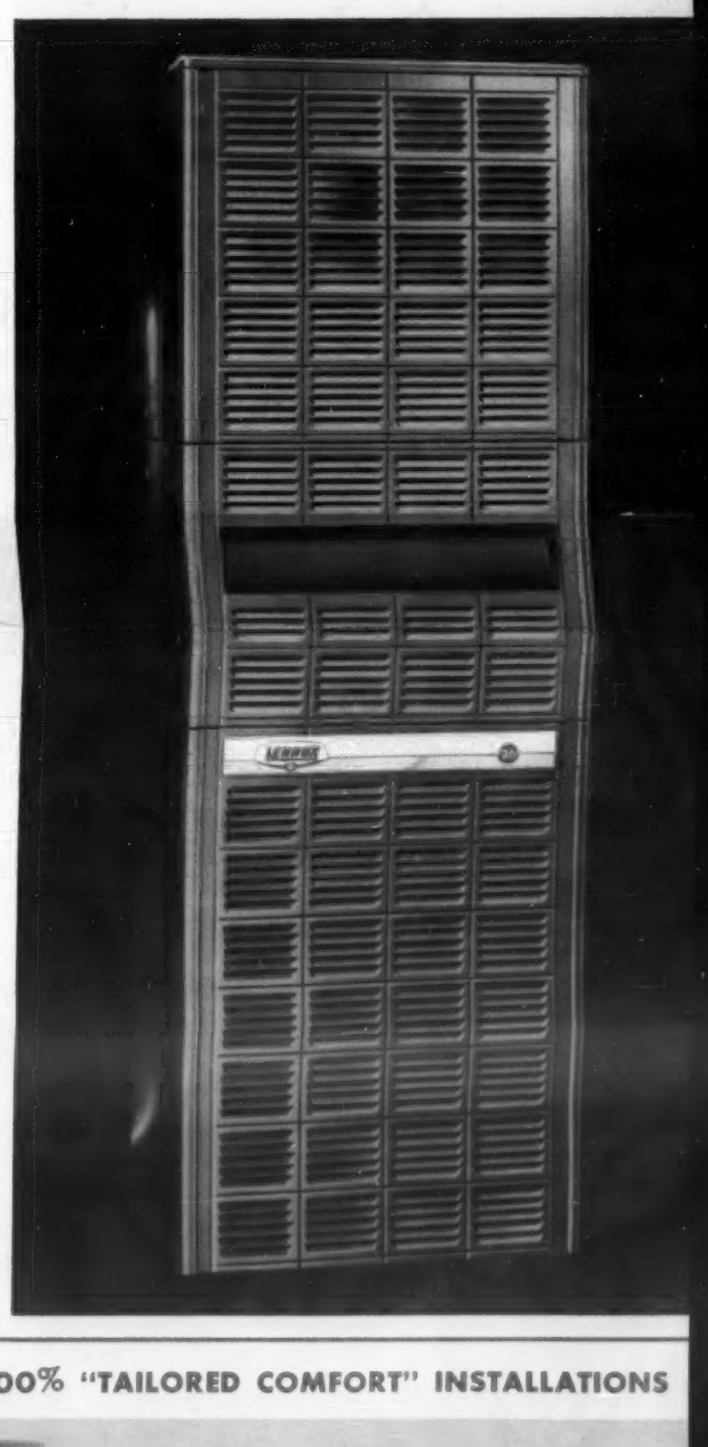
"Blocks" fit together as 1 attractive unit!

EASY AS "ABC"

A On an Up-Flow system, the bottom "block" is the blower and filter. Designed for spectacularly quiet, powerful air movement, it features a 2-speed motor with automatic control. In Down-Flow installations, this section goes on top.

B Whatever the fuel choice—gas, oil or electricity (heat pump) the next "block" fits on snugly and easily. Wide range of Btuh capacities to assure proper sizing of each installation.

C Now or later... the cooling coil "block" can be added, and the three sections form one all-season unit. Beautiful... quiet... economical... and you do it with less labor and with fewer inventory problems!

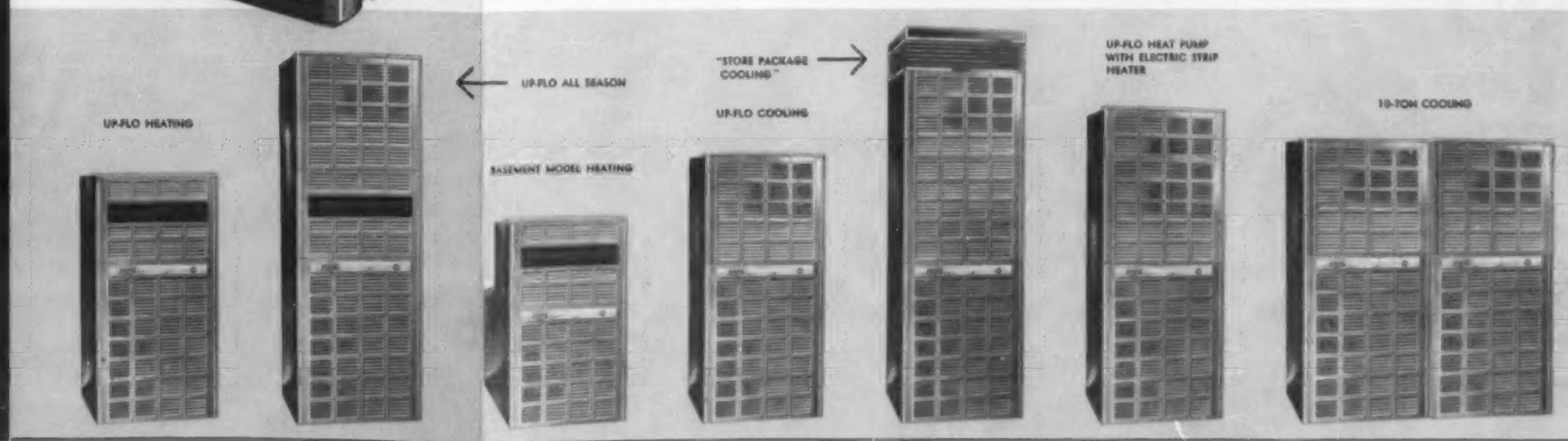


Spectacularly Quiet!

Landmark by LENNOX

Each section is housed in a beautiful 20 gauge steel cabinet. Corners are molded into pleasant curves, and centering pins assure perfect alignment to give the appearance of a single unit. Four basic widths: 26", 34", 52" and 68". 2 to 10 tons. Standard depth is 28" (except basement model blower section which is 42").

UNLIMITED COMBINATIONS . . . FOR 100% "TAILORED COMFORT" INSTALLATIONS



FORCED AIR FURNACES

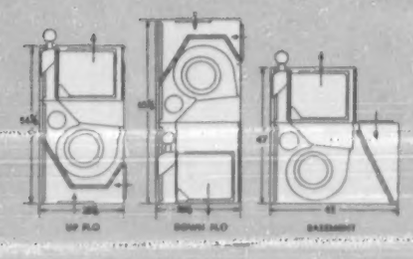
Height and front to back dimensions are constant for all sizes. Widths vary. Sizes range:

Cfm—600 to 4,400

Gas Input—68,000 to 340,000 Btuh

Oil Input—91,000 to 378,000 Btuh

Additive cooling possible—2 to 10 tons

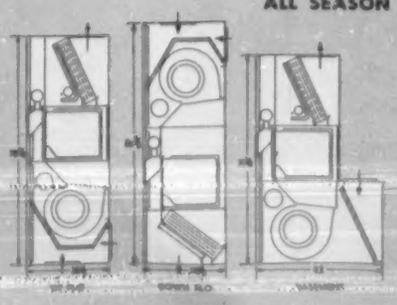


ALL SEASON AIR CONDITIONERS

Here the cooling coil section (evaporator) is added to the blower and heating sections. You have the same heating capacities shown for furnaces.

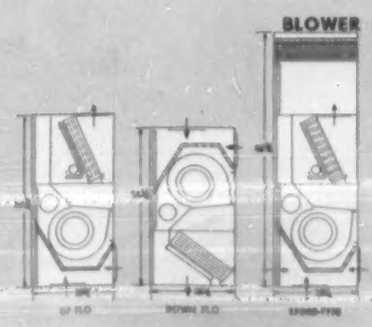
Cooling capacities—2 to 10 tons

Two-speed blower motors shift between heating and cooling Cfm automatically when desired. No change over damper!



BLOWER POWERED LOW SIDES

Here the cooling coil section of the Landmark by Lennox is joined with the blower-filter section. Capacities—Cooling, 2 to 10 tons. Cfm—600 to 4,400. Amazingly quiet performance at max. capacity. With Diffuser Head use empty cabinet as spacer to achieve proper height.



HEAT PUMP INSIDE UNIT

Inside coil unit combines with blower-filter section. Compressor with outside coil is located remotely outdoors. Exceptionally quiet and efficient.

Electric Resistance Heaters are in separate but matching cabinet 10" high. Complete with exclusive Lennox "Sequencer" Control.

NOT just "revolutionary"... NOT just a new model

BASIC CHAN

LENNOX introduces the First and Only "
air conditioning and heating

100%

"TAILORED COMFORT" PLUS FASTER, EASIER INSTALLATION

In this fast-moving world of scientific achievement, Lennox engineers decided to DO something—to make the heating and air conditioning industry as modern as space flight. They backed away from yesterday's traditions . . . were told to spare no expense to bring out the best equipment that could be designed. Not even one bolt was to be spared a close examination!

With the dedication of scientists, the wisdom of experience and enthusiasm of youth—they developed the "block" system of comfort equipment.

It's so revolutionary in every way, it's bound to set the pattern for the entire industry for years to come. It's truly a "landmark" in the field of comfort . . . so wonderful in possibilities to both you and your customers!

✓ Eliminates
mismatching of bl
and/or heating ca

✓ Prevents
making installatio

✓ Stops **costly ti**
and installation p

A new era begins and

el . . . it's the

NGE

"BLOCK" type
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blower with cooling
capacity

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time-wasting guesswork
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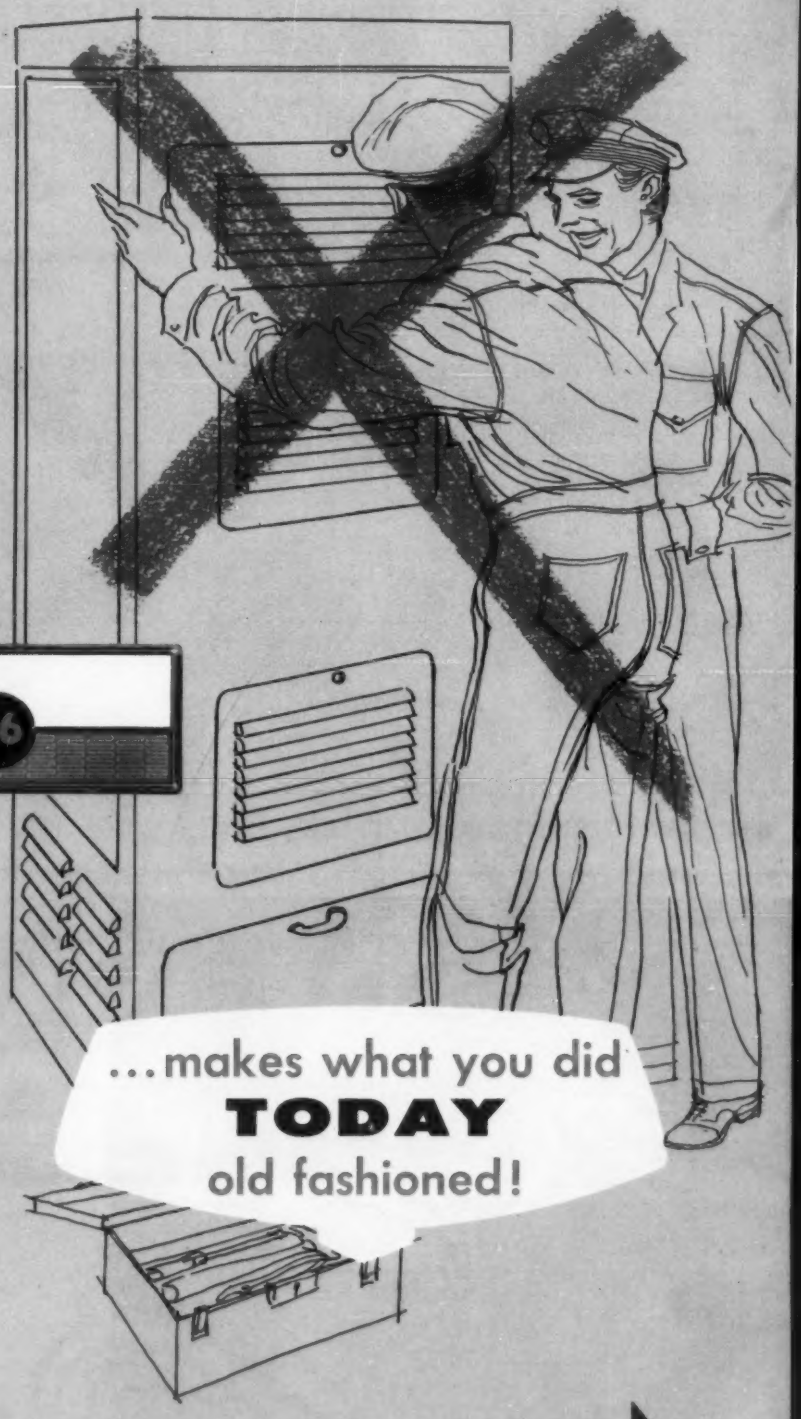


. . . makes what you did
TODAY
old fashioned!

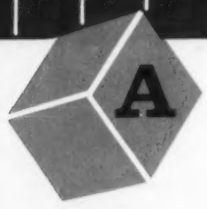
it's all LENNOX

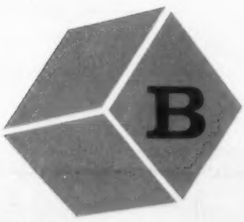
See the detailed facts inside this folder

Here they are... Epoch-making

BLOCKS

from LENNOX®





entirely new... and easy as ABC

Here are some of the other LENNOX "firsts"...

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- Gas furnace for attic installation
- Heavy gauge steel gas-fired furnace
- 100% hermetic air conditioner for homes
- Completely resilient blower mounting
- Hammock type filter
- Perimeter heating
- Direct-draft damper
- Wrap-around heat exchanger
- Flat-flanged coil fins
- Power saving Power Props

and now ...the *all* new

LENNOX BLOCKS

Open this folder

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air conditioning and heating... another LENNOX "first"

Phone... wire... or write today for the greatest profit news in the industry!

Lennox Industries (Canada) Ltd.
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LENNOX Industries Inc.

Established 1895

Printed in U.S.A.

Contractors Air Pricing Policy Gripes In RACCA Session on 'Selling for Profit'

CHICAGO—"If you don't sell for a profit you can rest assured that the sheriff is just around the corner," George T. Howe told the Refrigeration & Air Conditioning Contractors Association at a "money making forum" held during the group's 12th annual convention here, which also heard complaints raised about some pricing policies of manufacturers.

'Real Problem'

"Selling for a profit has become a real problem in our business of commercial refrigeration and air conditioning, as evidence by the large number of business failures and the still larger number of people still in business with many financial problems," said Howe, a veteran Chicago contractor and former RACCA president.

"Quite a few of these conditions can be solved if we will all draw closer together in our association work," he suggested. "We can learn, for instance, that we cannot with safety go below a certain per cent mark-up. Facts and figures can be produced by your local association officers and directors which will confirm this statement."

Discussing briefly the basic problems faced by the individual salesman, Howe pointed out that the salesman's knowledge of his customer will "help him determine whether a direct or indirect method of selling should be used.

Direct Sales Method

"By a direct method I mean an approach that is made to the prospect after a friendly atmosphere has been established. This direct method of selling is getting to the product involved as soon as possible and asking for an order.

"An indirect method of selling is done by creating the same friendly atmosphere, and, if possible, wating for the prospect to ask some questions regarding the product. Tell the prospect the number of places now using this type of equipment, and follow this approach by saying, 'But it is just possible the amount of business you do would not warrant the expenditure.'"

"This type of selling often works on a prospect with a considerable amount of esteem for his own ability, but, again, the salesman's capabilities of recognizing this type of prospect is of great importance," Howe declared.

"During the past year sales meetings have been conducted in our organization on Monday morning of every week to review the sales of the previous week and to make recommendations so various problems that have been encountered can be corrected.

"We have two salesmen in this sales group who were constantly complaining about their lack of sales due to the fact that our established prices were too high, and on one occasion one of these men chose a specific item as being priced entirely out of line.

"It so happened that a sale had been made the previous week on this item, and it had been sold at the established price. The signed order was produced. Needless to say, we haven't had too much trouble with these men since," Howe said.

"Complaints by salesmen about business being poor calls for a different action. The action taken by our company was to send one of our officers into the field with the sales person who did the complaining to help him close some new orders.

'Gives New Confidence'

"This procedure helped to give the salesman new confidence in his ability to sell, and sell for a profit.

"Never use a falsehood to create a sale. A claim made for a product which is not true may result in customer dissatisfaction and, of course, no further sales from this customer," Howe commented.

In a lively discussion which followed Howe's talk, questions about current practices in distribution and pricing were raised and discussed by various contractors. For example:

"What can be done about the manufacturers and so-called wholesale houses selling in direct competition with the contractors?"

Comment: "That has been a problem and I can tell you what can be done about it. Make this association grow to the point where we will be a dominant factor and then we can tell them how this thing is going to go, and to whom they sell it."

Gripes on Mfrs. Suggested Prices

"What can we do about manufacturers that set our selling prices? You read in much of the national advertising, 'This product for so much money installed in a home.'"

Comment: "That is another association matter I would say. But, believe me, top management in any company should not be coerced into selling a product, regardless of what it is advertised for, below what they think they should sell it for."

"I agree but something has to be done immediately, because if a national advertising magazine, or whatever it might be, lists a price of so much, installed, you are automatically set. There isn't a thing you can do about it. You must sell it at that price. It is being done every day. I think it is a project that should be handled immediately."

Comment: "Some two or three years ago we happened to handle ..... products here in Chicago. They advertised ..... ice cubers for so much money in a national magazine. Chicago people here, who were dealing with ....., got together with them at a meeting and told them that was the wrong thing to do, because you couldn't sell the same product in all areas at the same price. It was impossible, and they retracted their announced price. To this day I haven't seen any pricing of ..... equipment, commercial equipment, in the magazines."

Explains Difficulty

"I want to elaborate on one thing this gentleman said here about manufacturers setting prices. We have run into a lot of difficulties on that, where larger customers buy a lot of equipment direct or can buy equipment direct. There has been a little trend lately for some companies to have two prices, one an industrial price that I have come in contact with, and the other is a regular contractor's price.

"One of the best illustrations we had in the last six months of it was .... company where they had an industrial account price, and they had a contractor's price, and it happened in two different accounts, where two different accounts were going to attempt to buy the product cheaper than our quotation, and we found out that if we didn't try to go wholehog on the deal that our price would just about match the quoted price of ..... to the customer on the industrial basis.

"The reason I bring that out is that I think the association should go after that tactic and encourage it. I know that it is in operation and I know in our case we were damned pleased with the situation."

Johnson Heads Ft. Worth Air Conditioning Assn.

FORT WORTH, Texas—Grant H. Johnson, Jr., sales manager of Webb Air Conditioning Co., has been elected president of the Fort Worth Air Conditioning Association. Other officers are Robert S. Phillips, Phillips Engineering Co., first vice president; William R. Porterfield, Lone Star Gas Co., second vice president; and Max B. Mobley, secretary-treasurer.

Directors include Morris N. Kaastad, E. O. "Gene" Wood Co.; J. "Tom" Threadgill, Koldaire Supply Co.; W. P. Sweaney, Air Rite Engineering Co.; retiring president D. E. Beals, Beals Plumbing & Heating, Inc.; E. D. McCoy, executive sec.

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STEEL
Beam Clamps
for Mounting Hangers on I-Beams

Mounts Mineralloc hangers No. 0 to No. 6 on I-Beams without necessity of drilling holes. Have ¼-20 tapped holes. Fits beam flanges up to ½" thick. Low cost. Send for literature.

MINERALLAC ELECTRIC COMPANY
25 N. PEORIA ST. • CHICAGO 7, ILL.

Break the BARRIER and close the sale

SELL ON TIME — COMMERCIAL CREDIT PLAN

A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over $200,000,000 . . . offices in principal cities of the United States and Canada

Most of your prospects need their cash reserves and usual lines of credit for current operations. Break through this financial barrier. Make it easier for the prospect to sign on the dotted line by including financing arrangements. COMMERCIAL CREDIT's Refrigeration Plan is backed by many years' experience in your industry—experience in handling financing for thousands of commercial refrigeration and air conditioning installations.

Let us show you how COMMERCIAL CREDIT experience and know-how saves you time and money . . . and helps you close sales with less delay. Call our office in your city, or write COMMERCIAL CREDIT CORPORATION, 300 St. Paul Place, Baltimore 2, Md.

Make your proposals complete . . . include financing with COMMERCIAL CREDIT PLAN

For more information about products advertised on this page use Information Center, page 26.

Robert Hall Conditions 107 Stores with Package Units

COOLING TOWERS are either located at the rear of roof away from chimney, as in this picture, or in wire mesh cages at the rear of lot. Two of the 107 installations required indoor placement of the Halstead & Mitchell cooling towers.

NEW YORK CITY—When installation was completed last year on 214 York "Hi-Ef" water-cooled air conditioners with 107 Halstead & Mitchell cooling towers, in 107 Robert Hall Clothes, Inc. stores coast-to-coast throughout the U.S., it marked one of the largest single sales of packaged air conditioning units ever made to retail stores.

With most of the installations having been in operation for nearly a year, the Robert Hall management reports that it is pleased with the results. The decision of the retail clothing chain to air condition this large number of stores was made without formal studies or surveys. The management just held the firm belief that air conditioning would help sales.

Robert Hall, like all other retailers, merchandises heavily before the actual use season and "it's hard to sell heavy clothes in hot weather in a warm store." No alterations to stores, such as shades or screens, were used to ease the load.

Water-cooled equipment was chosen for its high efficiency and comparatively low demand on valuable store space, according to Ralph J. Gurfield, Robert Hall's supervising engineer.

The compactness of the water-cooled equipment installed was cited as a very major advantage, when every cubic inch taken up by the system means space eliminated from store sales space.

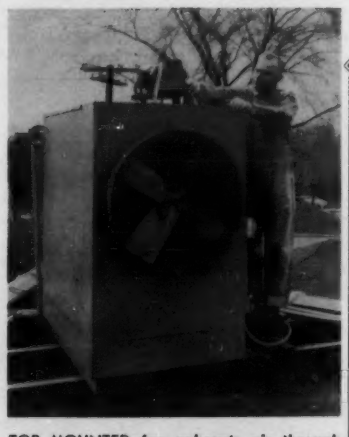
Installations were all packaged systems discharging conditioned air directly into the sales rooms. Only sales rooms were conditioned. Ductwork was

(Concluded on next page)

Clothing Chain Tells How It Profits From Cooling

How has this tremendous venture into air conditioning helped Robert Hall sell? In many ways, according to the company's top management. In the words of Harold Rosner, clothing chain president:

"Clothing soilage from perspiration and air-borne dirt has been reduced. More customers have come into our stores during the hot summer months. Employes have enjoyed the healthier, more comfortable conditions and have done a better selling job."



TOP MOUNTED fan exhausts air through WT-15 cooling tower. Attendant stands on pump which circulates water from tower sump through York conditioner and back to tower.

YORK EMBASSY model 752 water-cooled air conditioners were used in the 107 Robert Hall stores from coast to coast. No ductwork was used with the units which were installed directly behind the the air conditioned areas.

MARSH
Instruments

THE SERVICEMAN LINE of Testing Gauges, Testing Thermometers, Timers, etc.

PRESSURE GAUGES and Dial Thermometers for all services.

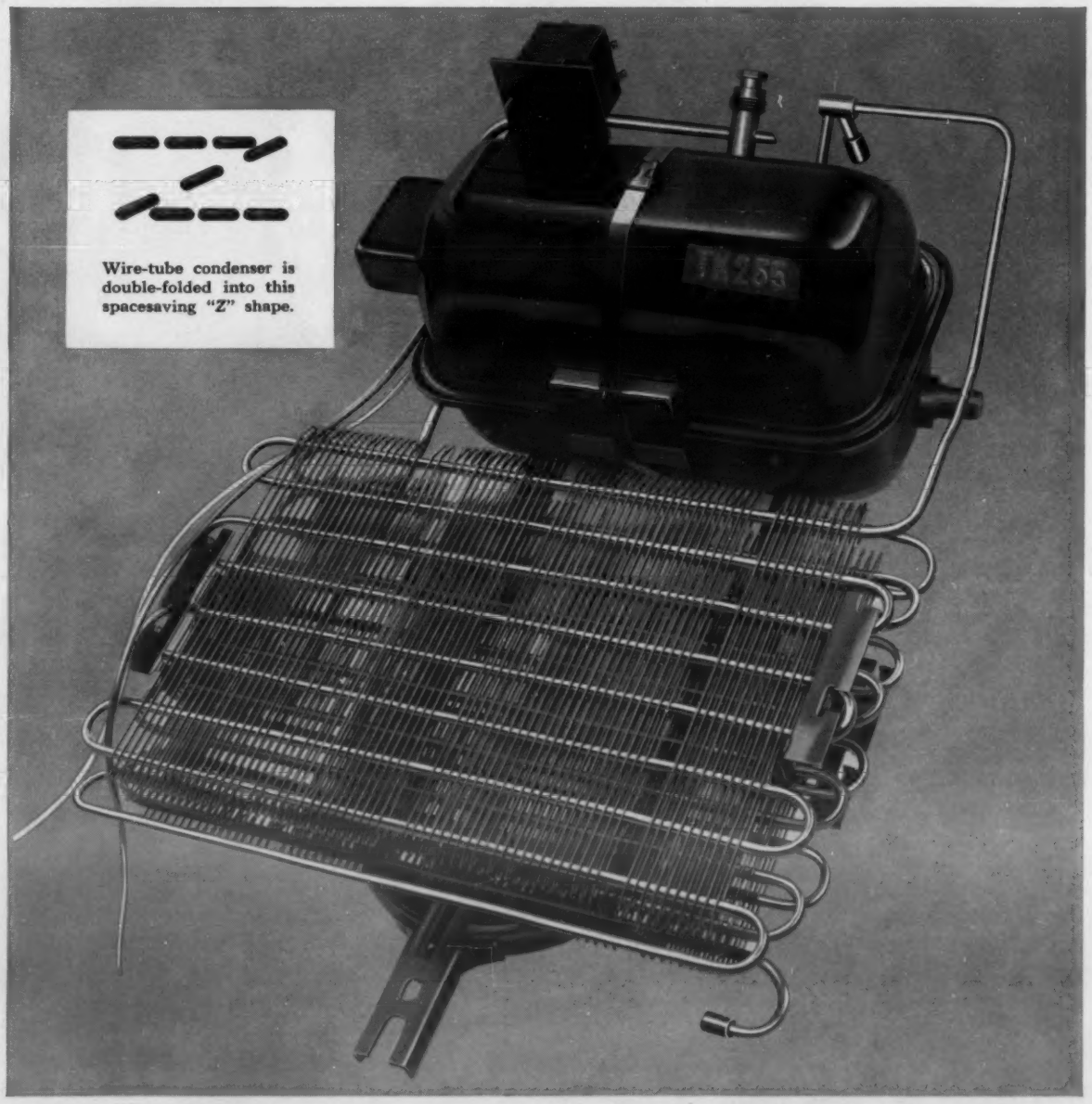
MARSH-ELECTRIMATIC, Water Regulating Valves, Solenoid Valves.

MARSH INSTRUMENT COMPANY
Sales Affiliate of Jas. P. Marsh Corporation
Dept. D, Skokie, Ill.

Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.

Place your ad today!

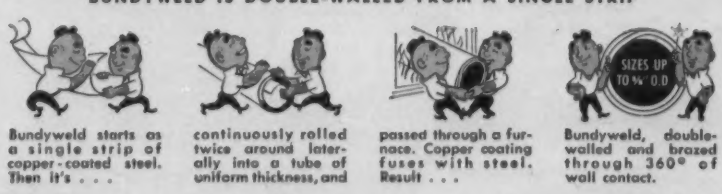
Z-condenser of Bundyweld Tubing



Wire-tube condenser is double-folded into this spacesaving "Z" shape.

New-design "Z" condenser made with leakproof Bundyweld Tubing fits *inside* General Electric's Straight-Line Design refrigerators and freezers. High thermal conductivity of Bundyweld plus fan (not shown) insure maximum cooling efficiency.

BUNDYWELD IS DOUBLE-WALLED FROM A SINGLE STRIP



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .

continuously rolled twice around laterally into a tube of uniform thickness, and

passed through a furnace. Copper coating fuses with steel. Result . . .

Bundyweld, double-walled and brazed through 360° of wall contact.

NOTE the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

For more information about products advertised on this page use Information Center, page 26.

(Concluded from preceding page)
not used because Robert Hall wanted to avoid both the expense and unsightliness of ducts and the alteration costs of hiding them.

Problem of Location

The location of air conditioners presented a problem. First of all, York surveyed all stores and made specific recommendations as to best locations for optimum air distribution. These were reviewed and either accepted or rejected by Robert Hall with regard to sales economics and the loss of valuable selling space. Where relocations were necessary, additional piping and installation costs were sometimes encountered.

Halstead & Mitchell cooling towers, with a 20-year guarantee on the wetted deck surface, were chosen because they were suggested and approved by York, and because more than 95% of the condenser cooling water can be reused. This met the water conserving requirements of many communities where Robert Hall stores are located, that towers be used with water-cooled air conditioners.

With the exception of the Hartford, Conn. and Chicago stores, all cooling towers are mounted on the roofs of store buildings to the rear, and away from chimneys, or are located behind the buildings at grade level enclosed in wire mesh cages.

Indoor installations, first floor at Hartford and third at Chicago, required oversize sumps to handle possible overflow, and special provisions were made to supply and discharge air from the towers. Towers were also insulated from the floor to eliminate noise and vibration, and special instructions on operating pumps were attached to the air conditioner cabinets.

Where stores are located right to edge of lot lines, conditioner condensate is pumped to the roof gutters for disposal. Rooftop towers spill overflow and bleed-off water to the roof. At the two indoor towers, discharge excess is piped directly to sewers.

Typical Installation

W. F. Albern, project engineer for York-Detroit Contractors, describes a typical installation, one of eight in the Detroit area, thus:

"We installed a Halstead & Mitchell WT15 cooling tower on the roof, mounted on steel beams placed across the parapet at one corner. At the outlet we placed a 1½-hp. pump. The tower serves two Embassy Yorkaire model 725 water-cooled air conditioners, each with a capacity of 7½ tons."

Except for heat anticipators in the thermostats to provide extra sensitivity, standard York controls are used on all installations. No special provisions were made to condition fitting rooms directly, although at several locations up to 25% fresh air is introduced to aid in exhausting stale air.

In selecting equipment, Robert Hall was concerned with acquiring systems which could be maintained by an untrained porter and a common sense manager without technical background. To simplify maintenance and operation, York provided instructions on regular filter cleaning (filters on air conditioners are the only air cleaners used) on a specially prepared card attached to the controls cover on each unit.

All units get four periodic inspections during the annual 6-month use season by a local air conditioning service company. Robert Hall is now negotiating with a water treatment firm for a survey of all areas in which their stores are located. The firm will then make specific recommendations for water treatment at each location.

Experimental Unit

WHAT'S A "TEMPATRON?" It's a new experimental unit by Hotpoint Co. that heats water, dehumidifies, chills foods, air conditions, and ventilates. It stands 7 ft. high and is 27 in. wide.

'Tempatron' Is Water Heater, Food Chiller, Air Conditioner, Etc.

CHICAGO—"Tempatron," an experimental unit that combines heat pump water heater, air conditioner, dehumidifier, food chiller, and ventilator all in one 7-ft. high cabinet was exhibited at the Winter Marts by Hotpoint Co.

The Tempatron is one of nine "Custom Trend" appliances, examples of new product design, that Hotpoint offered for dealer and consumer reaction at the mart.

Designed for basementless homes and those with small kitchens, the unit is 27 in. wide and has a work surface 36 in. from the floor. Top of unit is air conditioner, center is chiller, bottom is heat pump water heater.

Starting with a cold tank of water, combination operates as a heat pump water heater and raises water temperature to about 125° F. Air conditioning is furnished during water heating cycle.

Above 125° F. heat pump effect rapidly decreases so a transfer thermostat changes circuit from heat pump water heater to conventional air conditioner. It then energizes a resistance heater to raise water temperature to about 150° F.

During water heating cycle if air conditioning is not desired, a room damper exhausts cold air out of the room. A calibrated opening allows cold air into chiller for preservation of stored items like fruits, vegetables, pies, etc.

If only air conditioning is desired special circuit provides for this and hot air is exhausted outside. Dehumidification is automatically obtained whenever the compressor operates. A separate switch also allows only ventilation.

Chiller or cold pantry compartment is easily accessible adjunct to regular refrigerator, it is pointed out.

Door panels hiding heat pump water heater are finished in Cinese red porcelain enamel with gold veiling. Remainder of unit has stainless steel and brushed chrome effects.

helps G.E. design a true "built-in"

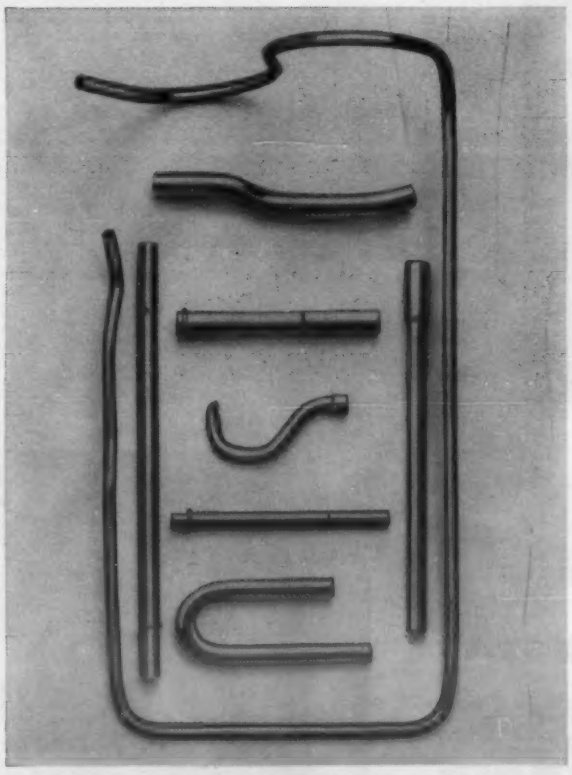
"Fold-up" condenser to go inside flush-fitting cabinets calls for the strength and ductility of Bundyweld Tubing

General Electric pioneered the modern "built-in" look with its Straight-Line Design refrigerators and freezers. However, G-E engineers were faced with a real challenge before the design became functional. Since flush-fitting cabinets restrict air circulation, conventional back-mounted condensers were not practical. Problem: relocate the condenser. Solution: G-E design ingenuity—and serpentine-coil tubing, such as that of Bundy Tubing Company.

Starting with the serpentine-bent Bundyweld,® G.E. forms a wire-tube condenser. Then this assembly is double-folded into a compact "Z." Result: a space-saving unit that fits *inside* the compressor compartment, where it gets adequate air circulation.

Bundyweld Tubing has the high strength and ductility to shrug off rough fabrication operations like this; still deliver extra years of dependable performance. Made by an exclusive process (below, left), Bundyweld is *leakproof by test.* That's why it has become the accepted safety standard of the refrigeration industry for evaporators, condensers, compressor parts, and refrigerant lines.

Add up: 1. Low-cost tubing fabrication by skilled Bundy® operators; 2. No-cost design aid from experienced Bundy engineers; 3. On-schedule deliveries to avoid costly production-line slowups—and you know why it pays to bring *your* tubing problems to Bundy. But why not find out for yourself . . . now? Call, write, or wire us today!



These parts for G.E.'s compressor (opposite page) are fabricated at Appliance Park, Louisville, Ky., from Bundyweld Tubing. Strong, ductile Bundyweld comes coiled, in straight lengths, or fabricated to specifications.

BUNDY TUBING COMPANY, DETROIT 14, MICHIGAN

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • AFFILIATED PLANTS IN AUSTRALIA, ENGLAND, FRANCE, GERMANY, AND ITALY

There's no real substitute for

BUNDYWELD® TUBING

Bundy Tubing Distributors and Representatives: *Massachusetts:* Austin-Hastings Co., Inc., 226 Binney Street, Cambridge 42 • *New Jersey:* Atlantic Tube & Metals, Inc., P.O. Box 595, Mountain View • *Pennsylvania:* Rutan & Co., 1 Bala Ave., Bala-Cynwyd • *Midwest:* Lapham-Hickey Steel Corp., 3333 W. 47th Place, Chicago 32, Ill. *South:* Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg., Chattanooga 2, Tenn. • *Southwest:* Vinson Steel & Aluminum Co., 4606 Singleton Blvd., Dallas, Texas *Northwest:* Eagle Metals Co., 4755 First Avenue, South Seattle 4, Wash. • *Far West:* Pacific Metals Co., Ltd., 2187 S. Garfield, Los Angeles 22, Calif.; Pacific Metals Co., Ltd., 1900 Third Street, San Francisco 7, Calif.

Bundyweld nickel and Monel tubing are sold by distributors of nickel and nickel alloys in principal cities.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

filled, and several other inquiries were received by the company.

This incident seems to contradict the findings of current youth surveys which have indicated that young men willing to work hard and start at the bottom are practically non-existent.

Hm-m-m

Public school in Albany, N. Y., conducted a noble experiment recently. Two mice were put in separate cages. One was fed proper diet of nutritious foods. The other was given all the whiskey it could sip.

Daily for two weeks the properly fed mouse ate his carefully compounded meals. The second mouse never missed a drink, and stayed happily squiffed.

Tuesday of the third week children peered into the cages, and saw that the well-fed mouse had passed on to rodent heaven. The soused mouse rolled out again for his daily shot, friskily as usual.

The experiment was discontinued by the school authorities.

Capitalizing on Human Nature

People like to see someone else make mistakes, or be embarrassed. Cartoonists and comedians have known this fact for a long time. Witness: Jack Benny.

That's why the Banner Candy Corp., deliberately commits "bloopers" in its filmed television commercials. In each of this advertiser's 10-second spot announcements the announcer suffers ignominy.

In one, he gets as far as the name of the product, forgets it, hastily looks at the front of the package, and stammers.

In others, he overturns a display stack of candy packs while reaching, or is camera-viewed as he scratches while awaiting his cue.

Banner, the sponsor, believes that these blooper-commercials are "calculated to jar the viewers' sensibilities."

That they do is evidenced by word-of-mouth publicity, remembrance of the name "Banner," and added sales.

Wholesale Brainstorming

"Brainstorming" has had so much publicity, and so excites the imagination of businessmen large and small, that it deserves at least momentary attention in this column.

Are you hep, Mr. Subscriber? It is logical to suppose that, if you are "Small Business" (and most of you are) you can't afford "brainstorming." Or, even if you can afford to employ this imagineering technique — in terms of time and personnel — it is also logical to predict that you may want a fresh, outside viewpoint.

So here's what you can do, in either case: Pick up the New York City telephone book and call "The Very Idea, Inc." Thereupon a crew of experienced creative thinkers will be made available to brainstorm for you.

Each individual creative think--think you buy from this illogical firm lasts from 15 to 45 minutes. Often as many as 150 ideas will be gathered in a single session. These will be recorded and delivered to you for a not-altogether-modest fee.

This is strictly "after hours" work for the TVI staff—members of which are regularly employed as advertising executives, publicity salesmen, and professional researchers.

TVI's brainstormers have discussed subjects ranging from the best way to remove snow from decks of Navy ships to speeding up supermarket checkout lines.

Their first success: choosing a cute name for their firm's activities.

Sponsor Announces Genetron Cartoon Contest Winners

NEW YORK CITY—General Chemical Div., Allied Chemical & Dye Corp., recently announced the winners of its "Genetron" Cartoon Contest conducted during the recent Air Conditioning and Refrigeration Exposition in Chicago.

Daily winners of the three-day contest were Ralph Holterhoff, Decatur, Ga.; E. Sartain, Racine, Wis.; and W. J. Van Buskirk, Latham, N. Y., each of whom was awarded a U. S. Savings Bond.

The winning cartoons were selected on the basis of originality, appropriateness, and clearness of thought.

The contest was conducted to develop ideas for the "Genetron Super-Dry Refrigerants" cartoon series currently running in AIR CONDITIONING & REFRIGERATION NEWS in which General Chemical is offering a prize of $10 for each idea used in the advertisement. In addition, the contributor's name and address is printed along with each cartoon.

Straight out of TOMORROW
for your profit TODAY

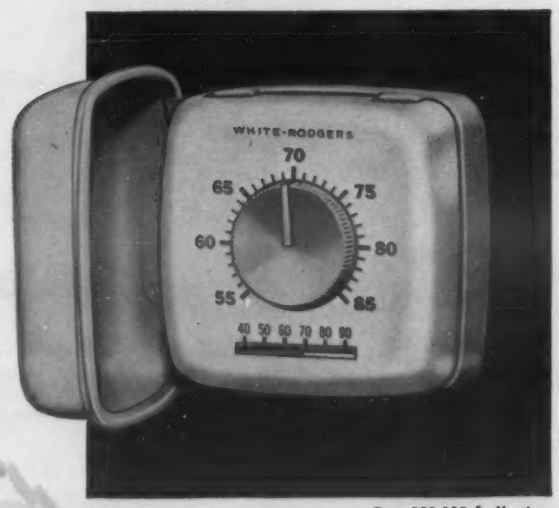
...two *Fashion*-Styled Controls by WHITE-RODGERS

the fabulous new
Fashion PUSHBUTTON
heating-cooling thermostat

PushButton, year-'round temperature control is now combined with the powerful, sales-motivating styling of the Fashion. Sub-bases to fit any heating-cooling system... backed by the name that's famous for quality controls... White-Rodgers!

the incomparable
Fashion THERMOSTAT

Styled to sell with the right shape ...the right color... smart hinged cover, can be painted to match the wall, no dials peek through. Ideal for replacement of outmoded thermostats... inconspicuous baseplate covers any spots left by old-style controls.



Type 120-113: *for Heating*
Type 121-113: *for Cooling*
Type 125-113: *Comb. Heat & Cool (SPDT)*

Both thermostats are equipped with latest design dial-type adjustable resistor... can be set to match any primary control

For full, profit-making details... contact your local White-Rodgers office—or write, wire or phone us today!

TEMPERATURE CONTROLS for MODERN COMFORT

WR WHITE-RODGERS

R-1518a ST. LOUIS 9, MISSOURI TORONTO 9, CANADA

Looking for a Business to Buy . . . ?

Check the Business Opportunities Section in the classified advertising columns.

FREE!

the only CAPILLARY reference GUIDE for the industry

NO GUESSING CUTTING ADJUSTING NOISE TROUBLE

The trend for economy and efficiency is engineered Capillaries. By all laws of refrigeration and physics demand a custom designed Capillary. A Sealed Unit Guide will help you order the right Capillary for the job!

Sealed Unit Parts Co., Inc.
261 East 161st St. New York 51, N. Y.
Send CAPILLARY Guide and prices
Name_____ City_____
Address_____ Zone___ State___

For more information about products advertised on this page use Information Center, page 26.

5 Ways To Fight Price Cutting Competition

CHICAGO—How can contractors continue successful in the face of steadily dropping margins and increasing competition? Here are some suggestions:

1. Reduce free service to a minimum.
2. Maintain a good accounting system to know costs accurately.
3. Strive for less competitive business, which will require more advertising, more aggressive selling, glamorizing of product, exploiting of new markets.
4. Improve and expand service business.
5. Exploit the replacement air conditioning market.

These were offered by Louis H. Streb, partner in Chicago Conditionaire Co., in a discussion of price-cutting during a "money making forum" held by Refrigeration & Air Conditioning Contractors Association at its 12th annual convention here.

A distinction was made by Streb between "voluntary" and "involuntary" price-cutting. The first occurs when the general contractor asks the subcontractor to shave his bid. "Involuntary" price-cutting results, he said, from competition due to economic conditions, and this is a more difficult problem.

More Seeking Business

Although the air conditioning market has increased greatly in recent years, there are now more firms seeking that business, said Streb, referring to the sheet metal, heating, and piping contractors who have entered the air conditioning field.

'Heating Man Has Lower Overhead'

The heating contractor, according to Streb, operates on a lower overhead because he "is used to doing the type of job that requires very little service, and the service that it did require he would usually be able to push off onto the oil burner guy or the temperature control guy.

"Until he gets burned or scorched on service problems a couple of times, he is going to be taking jobs at less of a markup than we are used to taking," Streb declared.

'Can Operate on 10% Markup'

Pointing out that a heating contractor apparently can operate on 10% markup ("a dickens of a lot lower markup than we are willing or able to work with"), Streb said that such a contractor doing about $500,000 a year business will get about $45,000 with his 10% markup.

"His total overhead on about that much business would only be about $19,500. That will leave him about $25,000 of profit. Actually, he is willing to accept that kind of a profit," Streb commented, explaining that "he supervises the job himself, and he has a half dozen pretty good mechanics that are capable of operating on their own. He has been doing it for years, so he is mighty tough competition."

Possible alternatives for the refrigeration and air conditioning contractor, Streb commented with tongue in cheek, are to get out of that competitive field or become so efficient as "to do twice as much business with the same amount of overhead. . . . Of course, the trick of getting twice as much business with the same overhead really is something I haven't quite solved," he admitted.

Then Streb offered the five suggestions summarized at the beginning of this article.

CORRECTION

An error was made in reporting the alloy specification in the article "Problems of Aluminum Usage in Refrigeration" which was published on page 15 in the Jan. 6 issue of the NEWS. In the article it was stated that "the significant factor in the specification is that the ratio between copper and iron should be 3 to 1."

While the ratio is correct, the elements are in error. Actually, as pointed out by H. Deuker, of Hotpoint Co., from tests conducted by that company — "it became apparent that the minimum *iron* to *silicon* ratio must be held at 3 to 1."

Coming March 4, 5, 6

62 Key Markets To See Dramatized Sales, Management Training Programs

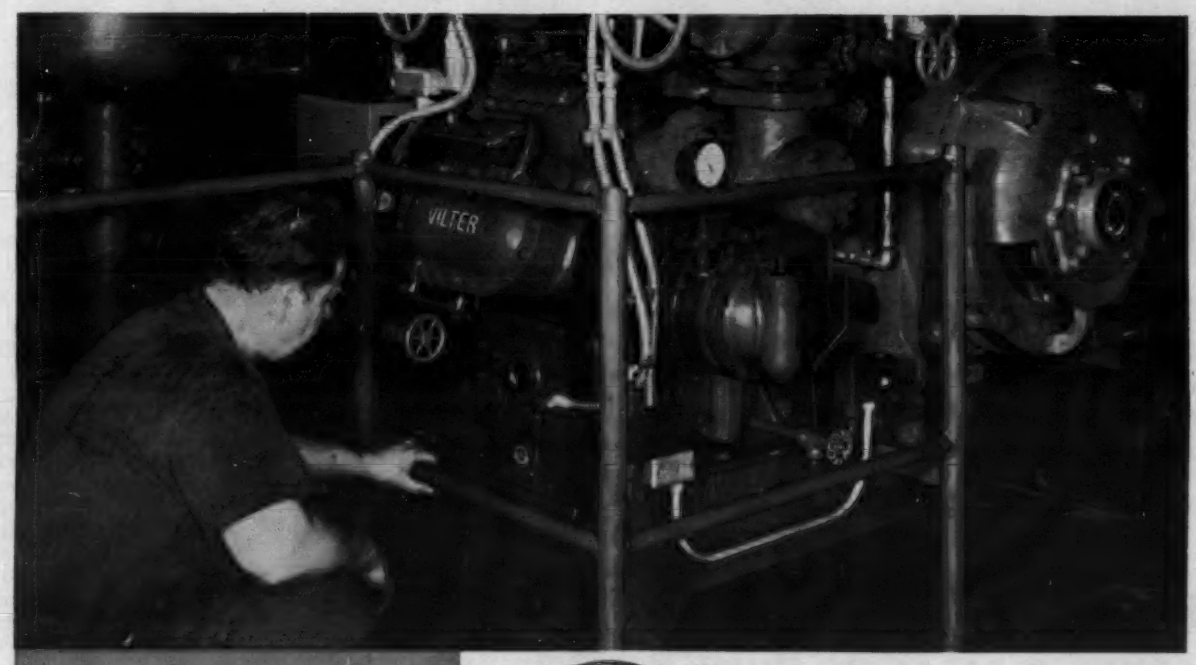
CHICAGO — "Tele-Sell" and "Tele-Manage," live closed-circuit TV sales and management training telecasts, will be presented in 62 key markets in the U.S. and Canada on the evenings of March 4, 5, and 6, according to Arthur H. "Red" Motley and Morris I. Pickus, creators of the Tele-Sell method of dramatized visual training.

Theme of the two 90-minute Tele-Sell sessions on March 4 and 5 will be "Problem Solving Through Research." The first night will be devoted to general and wholesale selling, followed by a second night on retail over-the-counter salesmanship.

The third night will be the world premiere of Tele-Manage —"a new approach to supervisory problems which will focus on one of the most crucial of all management responsibilities—'Decision Making.'"

In each participating city, a Sales Executives Club of Junior Chamber of Commerce is sponsoring the event as a club and community service project.

Get the power you need for smooth, swift compressor operation with



100 HP Century Performance-Rated type SCH Motor drives 4-stage compressor in air conditioning installation at large hotel.

Century Performance-Rated© MOTORS

Century has the motors you need... Performance-Rated to your *specific* applications! Here, a Century motor smoothly delivers the power for efficient compressor operation... with swift and easy acceleration from rest to full speed. Quiet starting and running characteristics; and where starting current must be limited, they are connectible for part winding starting. Available up to 400 HP.

You can get Century Performance-Rated Motors to fit the precise requirements of your installations: for compressors, circulating pumps, cooling towers, fans, blowers, stokers, etc. Sleeve or ball bearing; wide range of torque, speed, mountings, frames. Call or write your nearby Century District Sales Office or Authorized Distributor.

Performance-Rated© MOTORS 1/20 to 400 H.P.

CENTURY ELECTRIC COMPANY

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1806 Pine Street • St. Louis 3, Missouri • *Offices and Stock Points in Principal Cities*

Borg-Warner Declares Quarterly Dividends

CHICAGO — Borg-Warner Corp. directors declared a quarterly dividend of 50 cents per share on the common stock, and also the regularly quarterly dividend of 87½ cents per share on the preferred stock.

The payment of 50 cents per share on the common stock represents a reduction from the rate of 60 cents per share which has been paid quarterly since May 1, 1956.

Roy C. Ingersoll, chairman of the board, said this action was taken because of (1) slightly reduced earnings in 1957 compared with 1956, (2) the anticipation of lower income in 1958 due to a general downturn in the nation's economy, and (3) a need to conserve working capital for use in Borg-Warner's continued expansion program.

Air Distribution Requirements In Year-Round Air Conditioning

12. Fundamentals of Conditioned Air (Cont.)

By Frank D. Klein, Chief Engineer, Governair Corp.

Frank Klein has been associated with the air conditioning and refrigeration industry for over 20 years. An engineering graduate of the University of Michigan, he has held executive positions with a number of leading manufacturers.

The pinpointing of diametrical opposites in the psychrometric chart (Fig. 6) is primary for the moment and is done to illustrate the relationship of Dry Bulb to Wet Bulb Temperatures, the constancy or inconstancy of the Wet Bulb Temperature when related to the Dewpoint as well as the available constancy of the Dewpoint Temperature.

It may be well to review once again the definitions of these psychrometric factors.

The Dewpoint Temperature is that point where water vapor in an air atmosphere starts to condense from vapor to liquid.

The Percentage of Humidity is arrived at by dividing the actual weight of water vapor in an air atmosphere, with a given weight or amount of dry air when in mixture, by the maximum amount of, or weight of, water vapor which can be mixed with the same amount of, or weight of, dry air at the exact same temperature without causing the water vapor to condense into liquid. (Example to clarify):

Water Vapor in an air atmosphere @ 75° Dewpoint .....131.4 gr.
Water Vapor in an air atmosphere @ 56° Dewpoint .....66.85 gr.
Percentage Humidity: 66.85

$100 \times 131.4 = 50.9\%$ humidity.

In this connection we must remember not to confuse Percentage Humidity with the term Relative Humidity, because Percentage Humidity is based on the weight as a constant for calculation, of Dry Air, whereas Relative Humidity is based on volume as a constant for calculation, and volume as we know is subject to change with every degree of rise or fall in temperature.

The Dry Bulb Temperature is a measurement of Sensible Heat.

The Wet Bulb Temperature is a measurement of Latent Heat.

Total Heat is the total of, and the combination of, the Sensible Heat and the Latent Heat. Furthermore the Total Heat of an air atmosphere containing water vapor is dependent on its Wet Bulb Temperature.

The individual relationship of the various factors to the others must be understood. Using the psychrometric chart, place a ruler or straight-edge on the chart. At this point you have two known conditions. (1) The Dry Bulb reading is 85° F. (2) The Wet Bulb Temperature is 60° F. What is the Percentage of Humidity and what is the Dewpoint Temperature?

Move the straight edge over to the vertical line indicated at the bottom of the chart as 85°. Draw a straight line upward.

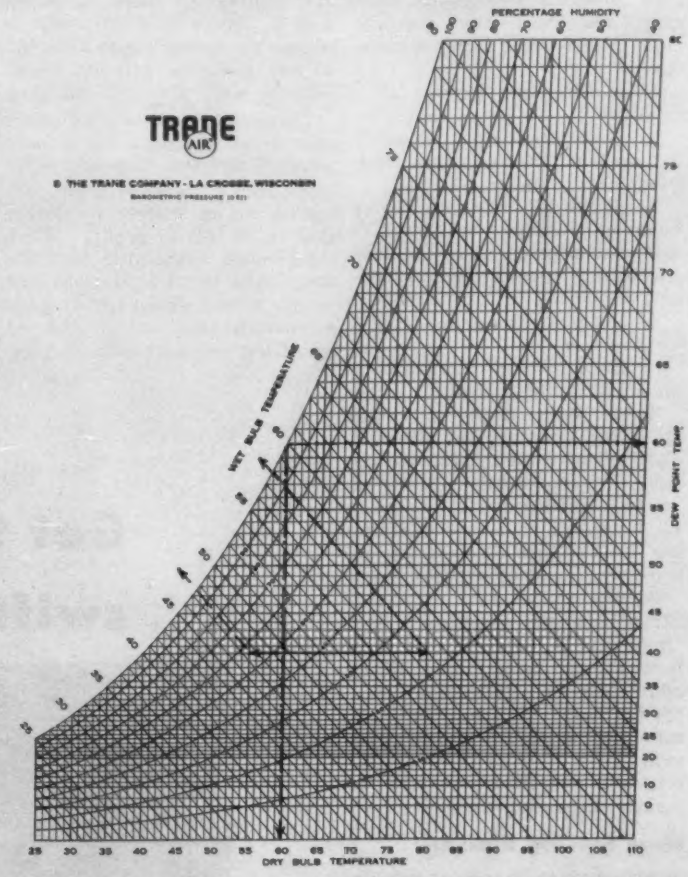


FIG. 6—Example carried out on a blank psychrometric chart provided by the Education Div. of Trane Co. on how to establish conditions of air from a given quality.

Next move the straight edge to the angle line running from left to right—downward indicated at the left hand side of the chart at 60°. Draw a line until it intersects the previously drawn vertical line from 85°. Next draw a line horizontally from left to right from the point of the two lines intersection.

The results of the above should indicate: (1) Dry Bulb—85° F.; (2) Wet Bulb—60°; Dewpoint—40°; Percentage of Humidity—20% (which is derived from the curved lines running from top to bottom and from right to left indicated at the top of the Chart as Percentage Humidity).

Let us consider another illustration. Assume that the air atmosphere you wish to condition has a Dry Bulb Temperature of 95° and Wet Bulb Temperature of 80° F. These you have determined by the use of a sling type psychrometer. You wish to condition this air to a composition of 78° F. Dry Bulb and 68° F. Wet Bulb.

First, determine all of the psychrometric factors involved in the air atmosphere with which you are dealing. Use the Chart again and (1) locate the vertical line for the Dry Bulb of 95°. (2) Locate the left-to-right angle line representing the Wet Bulb of 80°. (3) Find the point of intersection and reading left to right determine the Dewpoint Temperature which is approximately 74.9°. (4) Find the Percentage Humidity curve that intersects all three lines and we find that it is approximately 51%. Thus our problem becomes conditioning the air from:

	Dry Bulb	Wet Bulb	Dewpoint	% Humidity
Given Air Atmos'r....	95	80	74.9	51
to				
Desired Air Atmos'r..	78	68	64.9	62

Let us assume the opposite cycle of adding heat to an air atmosphere rather than subtracting it. Assume that you have a condition where the given air has characteristics of: (1) 55° Dry Bulb, (2) 48° Wet Bulb. The desired condition is: (1) 74° Dry Bulb, (2) 59° Wet Bulb.

By repeating the analytical steps made before in the previous paragraphs we find that the:

	Dry Bulb	Wet Bulb	Dewpoint	% Humidity
Given Air Atmos'r....	55°	48°	41.9	60
to				
Desired Air Atmos'r..	74°	59°	48.5	40

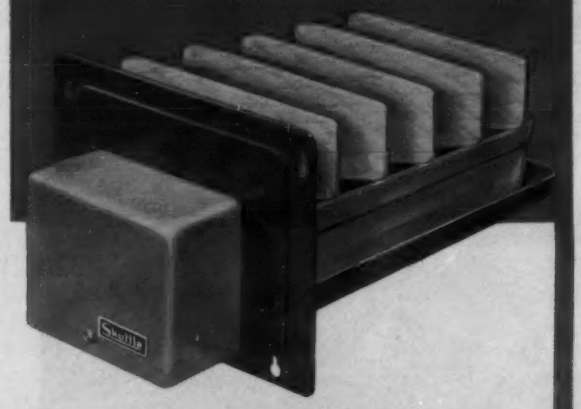
The foregoing illustrates the method for analysis to be used in determining, from two known factors, the entire relationships of the controlling psychrometric conditions in given quality, with indications for the psychrometric changes needed to produce that quality desired.

(To Be Continued)

Pittsburgh Plate Glass Plans Air Conditioned Plant

PITTSBURGH—Pittsburgh Plate Glass Co. disclosed it will build a completely air conditioned one-story, continuous fiber glass yarn plant at Shelby, N. C. It will contain more than 350,000 sq. ft. of floor space when completed.

IT'S NEW!
IT'S DIFFERENT!



IT'S SKUTTLE'S MODEL 711
COUNTER-BALANCED UNIT!

Increase your sales and profits with this new concept in humidification design. Sold as a package deal and completely assembled, the new Model 711 offers you these exclusive features:

- Self-adjusting to varied water pressures
- New type reversible seat
- No moving parts to wear, stick or clog
- Stainless steel springs and plate rack
- Oven-King heat-resistant glass evaporating pan for easy cleaning
- Impervious to rust and corrosion
- Quality tested Vapoglas plates
- Completely assembled for ease of installation
- Competitively priced
- Backed by time-honored SKUTTLE guarantee against defective parts and workmanship

Write today for illustrated literature on the new Model 711 and other profit-making models. SKUTTLE offers the most complete humidifier line in the industry.

Skuttle MANUFACTURING CO.
MILFORD, MICHIGAN
IN CANADA: WAIT-SKUTTLE CO., OAKVILLE, ONT.

OPPORTUNITIES FOR REPRESENTATIVES

TMC

Opportunities for representatives to handle TMC Molecular Sieve Filter-Driers in original equipment and wholesale fields. Valuable territories still open in New York State, except New York City, New England, Rocky Mountain, West and Northwest states. Write

TUBE MANIFOLD CORPORATION
435 Bryant St., N. Tonawanda, N. Y.

For more information about products advertised on this page use Information Center, page 26.

Lennox To Let Industry and Public Know They're In Air Conditioning

By George M. Hanning

CHICAGO — Lennox Industries, Inc. will increase its efforts this year to tell industry and the public that it is in the home air conditioning business, John W. Norris, president, declared here recently.

Norris was in Chicago to introduce Lennox' new "Landmark" indoor comfort machine at the National Association of Home Builders show.

"We believe the public knows we are in the heating business," he stated. "But we feel that our dealers are losing cooling business because their heating customers are not sufficiently aware that we make cooling units, too."

DEALER SEEN AS KEY FACTOR IN SELLING

Norris holds to the belief that the dealer is the key factor in selling residential air conditioning as well as heating.

"Sales and installation of other household equipment such as appliances and plumbing fixtures are pretty well standard," he avers. "But with heating and air conditioning it takes an intelligent man to tailor the manufacturer's equipment to the needs of a particular house and then to call back and adjust it to the desires of the particular dwellers in that house."

A good dealer with good equipment can create satisfied customers and additional sales through good installations, Norris added. He can, by patching up here and there, produce comfort with poor equipment.

PRICE IS LEFT UP TO DEALER

Such a dealer, he admits, needs a good profit margin. Otherwise he cannot afford to go back and make the necessary adjustments. Lennox encourages profitable operation by leaving each dealer to price his own work.

Only price advertising Lennox did last year was on a low cost attic unit, Norris said. This was intended to act as a traffic stimulator. It served its purpose, he declared, though some dealers objected to advertising price on air conditioning equipment. Some found that it brought in prospects who could be sold proper air conditioning systems for their homes.

Norris said that he was optimistic about air conditioning prospects for this year. He anticipates that home cooling volume could increase 35% over last year.

Lennox is bowing its first heat pump this year, Norris said, because for the first time a compressor designed for heat pump application is available.

Using standard air conditioning compressors has not proved satisfactory, he contended, because they became overloaded and overheated when operating on the heating cycle with outside temperatures of 55 to 65° F.

He anticipates the military housing in southern areas will provide a substantial source of heat pump business this year. As a result of the "Capehart" act, the military is authorized to provide more attractive housing as a career inducement for key personnel.

With the heat pump, the government can show a saving in construction cost by going all electric. In effect, the government is providing the tenant with cooling at no extra cost.

Norris believes that "civilian" heat pump business might account for 5% of cooling and heating sales this year.

York-Houston Names Eskew

HOUSTON, Texas—Robert K. Eskew, formerly general sales manager of the air conditioning division of Servel, Inc., has been appointed president of York-Houston Sales, Inc. here, it was announced recently.

Musts for Model Home Promotions

Coleman Offers 6 Steps To Assure Maximum Benefit From Participation In Model Home Campaign

CHICAGO—What should the air conditioning and heating dealer do when asked to participate in a model home promotion?

Here are a list of "musts" that Coleman Co., Inc. recently prepared for its dealers.

1. Provide for adequate identification of the furnace and cooling unit.

2. Make sure you have the right kind of sales literature on your equipment and sufficient quantity to hand to every adult who attends the showing.

3. Check and double check on your installation. Be sure it is well-engineered and clean enough to withstand the most critical inspection. Above all, make certain it works to perfection.

If the house is to be air conditioned, pre-cool it for at least 48 hours. Don't turn the air conditioner off at night.

4. Volunteer to spend time in helping the builder get his house ready to show and in actually showing it.

5. Share in pre-promotion by:

a. Mentioning the open house address and dates in your own newspaper, TV, and radio advertising.

b. Share in the cost of the builder's advertising of his open house.

c. Tell your employes, friends, and customers about the house and showing. Nothing can beat word of mouth advertising.

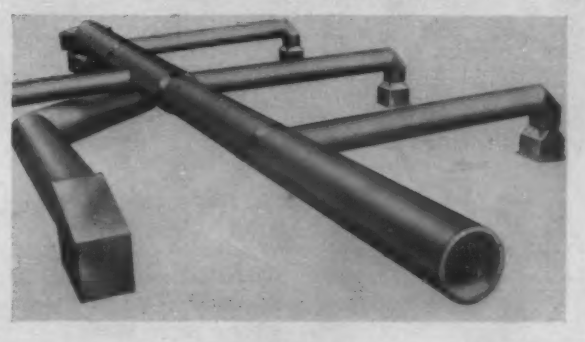
6. Arrange for a special product display in the garage or carport. This is especially worthwhile if the heating and air conditioning units in the house are not in plain sight.

Make use of the manufacturer's display material, photographs, sales literature—whatever it takes to prove to prospects that the builder has installed the best.

Reprints Available

Hermetic Compressor Design, Development, by Henri Soumerai. Only 40¢ each.
Mail this ad with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Major manufacturers endorse New G-B DUCT



Major manufacturers of residential air conditioning units know the value of good ductwork. They rely on it to handle the full rated capacity of their units. That's why major manufacturers have approved or recommended new G-B Duct for use with their units. They know it will mean more satisfied customers and more profits for you.

G-B Duct is the first prefabricated round air duct molded from fine glass fibers and encased in an air-tight plastic vapor barrier. *Positive performance* is assured by this new duct that provides "built-in" thermal insulation, sound absorber, and vapor barrier.

Easier, faster, more economical installation is assured because no special tools, training or experience are required. The new duct comes in one-piece 6-foot sections, ready to use—no preassembly, no folding, no messy adhesives, no drying time. All you need are templates (factory-provided) . . . a knife . . . plastic tape . . . simple sheet metal connections.

G-B Duct permits complete design flexibility because it comes in standard sheet metal pipe sizes. Where design calls for 6" sheet metal pipe, for example, simply substitute 6" G-B Duct.

Plan *now* to use G-B Duct on your next residential air conditioning job. See your local supplier, G-B franchised distributor, or —

WRITE FOR TECHNICAL DATA, SAMPLES, PRICES AND EASY "HOW-TO-DO-IT" INSTRUCTIONS

GUSTIN-BACON Manufacturing Company
218 W. 10TH ST., KANSAS CITY, MO.
Thermal and acoustical glass-fiber insulations • Pipe coverings and fittings • Molded glass fiber pipe insulation

For more information about products advertised on this page use Information Center, page 26.

Financing the Store of Tomorrow:

How can the commercial refrigeration distributor finance the store of tomorrow and still stay in business?

How far can he stretch the one-third rule for extending credit to customers and remain solvent?

Why should he look upon the finance charges his customer pays as "his money?"

How can the distributor avoid trouble on financed store equipment sales and keep from removing fixtures?

Milton I. Schwartz, executive vice president of S. & M. Schwartz & Co., New York City commercial refrigeration distributorship, offered some stimulating answers to these questions at the recent convention of the National Commercial Refrigerator Sales Association in Chicago.

So thought-provoking did his talk prove to be on a subject of urgent interest to every distributor that we are publishing it in two instalments in order to present it in full.

First part of Schwartz' talk appeared in the Jan. 27 issue of the NEWS. In it he urged distributors, in order to protect their time-payment contracts, to get the customer to sign a conditional bill of sale. He started to tell what should be in the contract for the distributor's protection. He continues here.

(Part 2) How Commercial Refrigeration Dealer Can Avoid Trouble In Selling Store Equipment on Time

Be sure that when you sign your Conditional, if you are signing with a new corporation, get the signiture of the officers authorized by the by-laws of the corporation to sign such papers.

Get Right Men To Sign Papers

You are entirely within your rights to ascertain that you have the right men on the signatures. In most instances a vice president of a corporation, by himself, is not authorized to obligate a corporation. That goes for new and old corporations.

Also, get personal signatures, at least guaranteeing two-thirds of the amount of the sale. I assure you that many of your prospective customers will get insulted when you request this of them. Still, do you get insulted when your bank requests it of you?

Make Agreement With Landlord

After you have signed up the deal, enter into an agreement with the landlord, if possible, where the landlord will give you permission, in case of bankruptcy, to keep the fixtures in the store, and give you an opportunity to rent it at mutually acceptable terms to the landlord and new tenant so that you will not be forced to pay rent, or pull your fixtures in case of bankruptcy.

Get landlord to sign the following clause:

"(Name), owner or landlord of the premises occupied by the vendees where the property covered by this conditional bill of sale are located, agrees that in the event he, it, or they, as the case may be, obtains a final order for the possession of the demised premises, that simultaneously with the landlord so obtaining such possession, or possession by reason of tenant's abandoning the demised premises, the vendee hereunder shall be deemed to be and shall become the tenant of the demised premises for a period of two months from the date of the final order, awarding possession to the landlord, or from the date of tenant's abandonment of the premises, whichever is later, during which two month period the vendor herein shall pay no rent or other charges whatsoever to the landlord, and, during which period the vendor shall use reasonable efforts to procure for the landlord a new tenant for the demised premises upon terms agreeable and satisfactory to the landlord.

"The purpose of this paragraph is to grant to the conditional vendor a two-month period within which to remove its property in the event it cannot procure for the landlord a new tenant satisfactory to such landlord.

Gives a Week To Remove Items

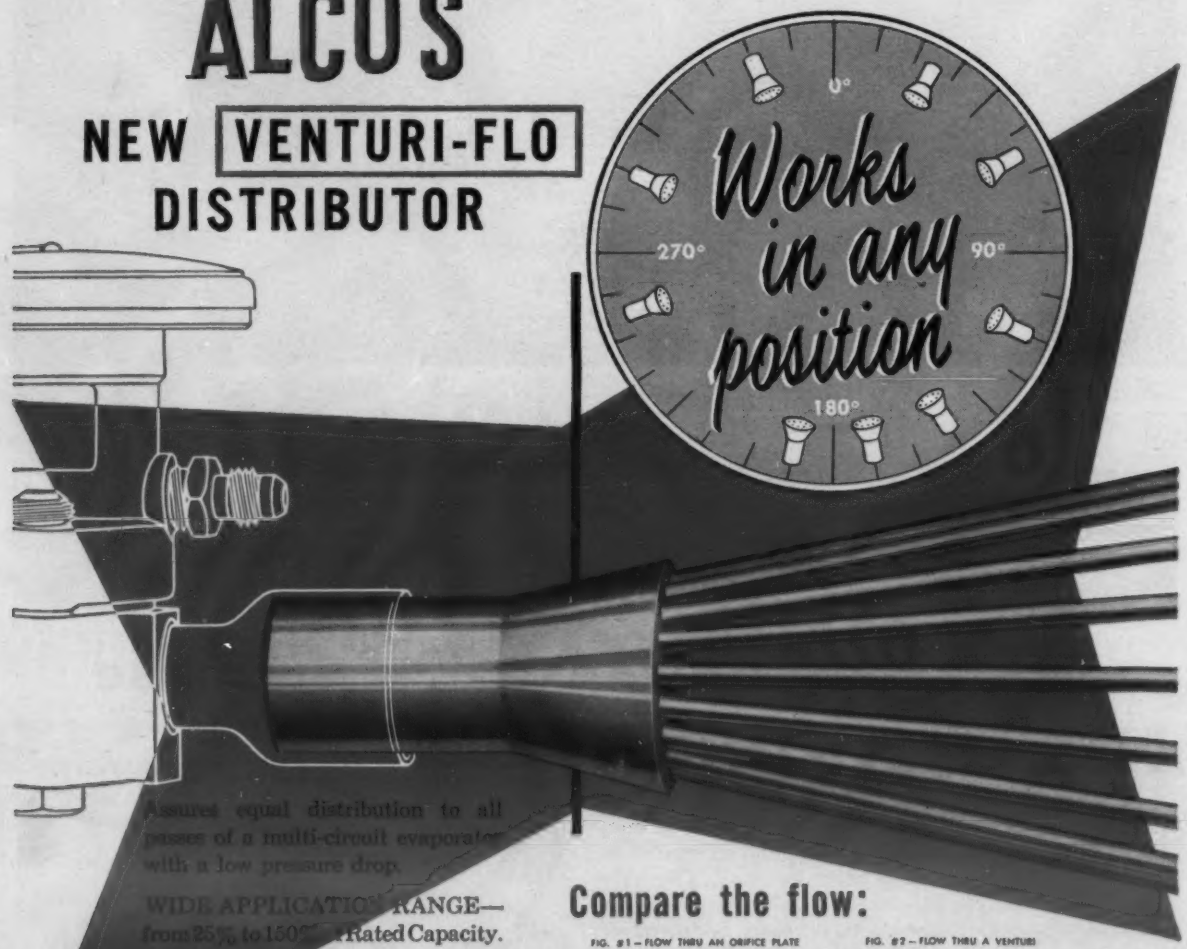
"If this is not acceptable to the landlord who is signing this below, the landlord agrees to give to vendor notice by registered mail. This means that the vendor will have one week from date of receipt of this registered letter to remove the fixtures. The landlord also agrees that in no way will he prevent the vendor from removing all chattels sold to the tenant of the landlord.

"The vendor agrees that he will repair any walls, or partitions that he may deface in

CHECK THE ADVANTAGES...THEN SPECIFY • INSTALL

ALCO'S

NEW VENTURI-FLO DISTRIBUTOR



Assures equal distribution to all passes of a multi-circuit evaporator with a low pressure drop.

WIDE APPLICATION RANGE—from 25% to 150% of Rated Capacity.

LOW PRESSURE DROP—permits closer, more economical Thermo® valve sizing—assures more stable valve control.

ONE PIECE CONSTRUCTION—nothing to come apart, nothing to take apart—*No orifices, plates or nozzles needed* for capacity regulation.

Compare the flow:

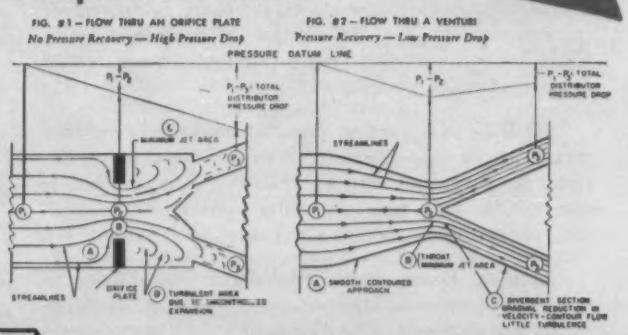


FIG. #1 – FLOW THRU AN ORIFICE PLATE
No Pressure Recovery — High Pressure Drop
FIG. #2 – FLOW THRU A VENTURI
Pressure Recovery — Low Pressure Drop
PRESSURE DATUM LINE
STREAMLINES
ORIFICE PLATE
THROAT MINIMUM JET AREA
SMOOTH CONTOURED APPROACH

Call your Alco wholesaler—write for Specifications Bulletin No. 188-57.

• BUY SECURITY
• BUY QUALITY
• BUY ALCO

ALCO VALVE CO.
853 KINGSLAND AVE. • ST. LOUIS 5, MO.

7810

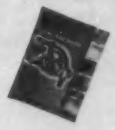
The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors • Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

Handy Tube Bender

Smoothly Bends any pipe or Tubing ⅜"-1⅛" O. D.

• Just a twist of the wrist assures perfect, even bends — right angle, any angle, U and offset. Save enough on ONE job to pay for your HANDY BENDER.

See your supply house—or write for free folder today.



HOLSCLAW BROS., INC.
428 N. Willow Road • Evansville, Indiana

Thinking of —

• changing territories
• expanding your territory
• taking on new lines—

Check the CLASSIFIED ADS

Your opportunity may be there.

For more information about products advertised on this page use Information Center, page 26.

moving his fixtures, and leave the store in reasonably broom-clean condition. Landlord agrees that he will allow a window to be removed should it be necessary to remove said chattels."

Always assume the worst. Take the position that every deal will go broke the day after the store is opened. That is what every finance man does in any kind of a business deal. The element of risk is greatly lessened if you keep your eye on that bankruptcy ball.

'Many Ways To Get Money'

Where to get the money for the store of the future? There are as many ways to get money as there are distributors in this room to claim that their product is the best one of all. But I don't think that anyone can argue that the best source of capital for a fixture distributor is his own capital invested in his business.

Now that may be easier said than done, but it will either be done, or your business will not withstand the pressure of financing your customers' papers.

The worst possible thing you can assume is that the finance charges paid by your customer is money that is not yours, and therefore, you can't care what happens to it.

'Devise Method To Keep Finance Charges'

In fact, it is your money if you can devise a method to keep it, you can do just that.

Capital investment of our company is now 50 times what it was 10 years ago, the difference being made up in the last 10 years at a profits retained income and profits from financing customer's paper.

Occasionally it is quite a strain. I am sure we have all had that experience. However, we have always realized that by holding your own paper, the profits that we made on the paper would be roughly equal to the profits that we could expect out of the sale of equipment.

'Guard Finance Profit Zealously'

Therefore guard the finance profit as zealously as you now guard the profit in the fixture deal that you sold today, yesterday, or the day before.

If at all possible, do not do business with a finance company, and if you do business with a finance company, don't get in the habit of doing all your business with them.

If you do business with the senior department of your bank, rather than the consumer credit department, which is also a finance company, you will usually be able to borrow money with customers' notes as security at simple interest rates.

If you sell at finance rates you will find that you make as much money on paper as you do in the sale of your refrigerators.

It is true that the amount of business that you can take will be limited by such an arrangement. But, in my opinion, it is the only way to build a business on a solid foundation. It is the correct way to finance the store of the future and, at the same time, assure yourself of having a fixture company in the future, too.

SLANTS ON SERVICE

"Slants on Service" is a "package" devised by the NEWS to meet the needs of busy servicemen and contractors.

Insufficient Oil Can Damage Unit

In many cases compressors that are returned are found to have been damaged by insufficient lubrication, the Service Dept. of Copeland reveals.

"We feel that this is negligence in that oil in the crankcase is not checked when a system is started, and after the customary check-back within the next 48 to 72 hours," says the Copeland service manager.

"We feel that this is a *must* since the customer has a right to expect that a new installation have a thorough inspection for fixture temperature, control settings, to see that the motor is lubricated, to check oil in the crankcase and to make any other adjustments deemed necessary.

"We feel that many times no thought is given to Refrigerant-12 affinity to oil. In many cases 20 lbs., 30 lbs., 50 lbs., 75 lbs., or 100 lbs., of Refrigerant-12 is charged into a new system and no oil is added to the crankcase. This applies to both Copelametic and belt-driven systems.

"Some systems require the use of an oil separator. The oil separator manufacturer specifies the amount of oil that should be charged into the oil separator so as to not deplete oil in the crankcase. Normally, this will vary from approximately 8 oz. in the smaller size to perhaps 32 oz. to 48 oz. in the 7½-hp. installation.

"We believe it good practice to use a rough rule-of-thumb method: add one pint of oil to the crankcase for each 10 lbs. of Refrigerant-12 charged into a system. True, you may have an initial overcharge of oil; however, the periodic inspection within the first 48 to 72 hours will permit adjusting the oil level and certainly is more economical than changing the compressor due to damage."

* * *

How To Drain Condenser Of Milk Cooler

Equipment using combination air and water-cooled condensers which is exposed to freezing temperatures in winter, such as many farm milk coolers are, must be protected against freezing.

Usual practice is to shut off the water and drain the water-cooled condenser before freezing temperatures occur, but what many users overlook is the fact that a shell-and-tube condenser will not drain completely by gravity alone.

A gallon of anti-freeze may be added to the water side of such condensers after they've been drained by gravity, or all the water can be forced out by compressed air.

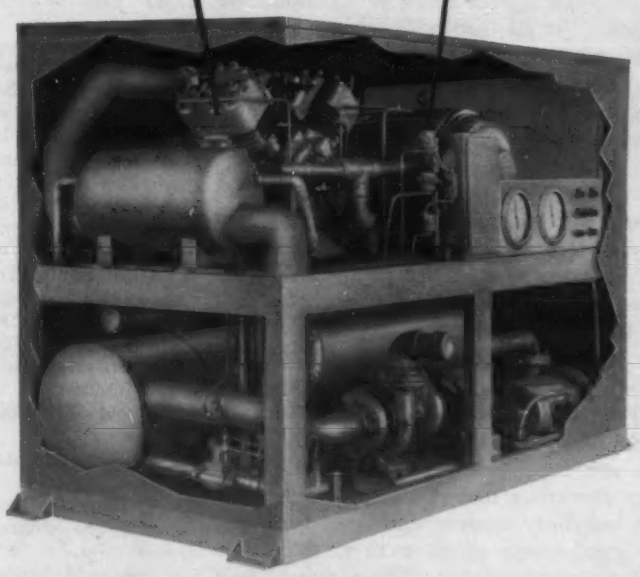
Advising customers of this problem could very well result in extra business, or at least goodwill, for the contractor or serviceman.

Looking for a Business to Buy . . . ?

Check the Business Opportunities Section in the classified advertising columns.

B&G COMPRESSOR AND ELECTRIC COMPRESSOR MOTOR

Designed and built by B&G! Better performing, longer lasting—built of the finest materials to most rigid specifications. *B&G quality in every detail!*



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1-6

Heating Contractors Candidly Reveal Their Handicaps

SELF-EXAMINATION is contrary to human nature. All too rarely does anybody or any "body" (especially a trade association) assay objectively his—or its—shortcomings. Humanly we tend to blame somebody else (our associates) or something else (the government or competitors) for our failures to achieve an ideal.

Congratulations, therefore, should be accorded members of the National Warm Air Heating & Air Conditioning Association for their candid appraisal of *negative* contributions by "heating people" to air conditioning progress. Pregnant quotes from the proceedings of a NWAHACA recent convention:

"You have been too content to be installers. We are being driven into the same cut-price, cut-throat, competitive position that the heating industry has suffered for so long," declared E. A. Myers, Jr., vice president and general manager of a Los Angeles heating and air conditioning distributorship.

"In the past three years, we (the heating industry) have been instrumental in bringing into the air conditioning business not only heating installers, but plumbers, electricians, refrigeration contractors, even appliance dealers and discount houses," Myers observed.

"Now, gentlemen, whose fault is that? It is nobody else's but yours. Because, up to this point the warm air installer has refused to accept the challenge of the air conditioning industry and absorb it unto himself and make it his own by becoming an air conditioning *specialist."*

Tyler Macdonald, vice president of the Hixson-Jorgensen Advertising Agency (which lists the Institute of Heating & Air Conditioning Industries of Southern California among several of its accounts in the heating-air conditioning industry) chastised the heating industry as "probably America's number one schizophrenic."

Pundit Macdonald added: "Residential heating is America's sickest business. Are you fellows determined to kill air conditioning in the same way you've busted heating?

"These are tough times—and I don't know if our bodies or our minds are up to the demands," asserted Macdonald, in advocating that industry executives study ways and means to conserve the physical and mental energies of valuable employes in meeting today's problems.

"This is an age of mass production," he continued. "It is an age where heating systems sell for less than a slump-stone fireplace. It is an age where we see, in heating and air conditioning, the coming of automation . . . where equipment can be banged out almost like television sets.

"The age-old adage of 'low overhead because I am so small' has to melt in the glare of automation and mass production.

"This is an age of distribution, simply because mass production can only be sustained by mass distribution of goods. Warehouses aren't big enough to contain the mistakes of small regional producers. We are trying to compete in a supersonic age with old horse-and-buggy techniques.

"In the food business the 'papa-mama' grocery store has had it," he averred. "Up to now our only answer has been for some of our good warm air men to go into residential air conditioning. This is only half an answer.

"We have the greatest opportunity of any industry in America in air conditioning. It has a great emotional pull. It has got everything it takes to be a successful business if we simply don't fight it too much."

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'The Conscience of the Industry'

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SERVICEMAN ASKS BETTER RELATIONSHIPS WITH MFRS.

Heinz A. Wobser
Refrigeration, Electric Ranges, Air Conditioners
Belmar, N. J.

Editor:

Having been a long subscriber to your paper nevertheless this is my first personal letter to you.

This being the start of a new year, I have just written a long letter to what I believe is our leading appliance manufacturer in the States complaining of the poor business relations between them and the servicemen.

Belonging to the RSES Asbury Park Chapter, I have spoken to many members also at state conventions and it seems the bigger the companies the more severe the complaints.

These are manufacturers that have a bearing on this, namely

1. Unions
2. Cost (production, inventory, etc.)
3. Transportation
4. Indifference because of specialty of product (most items can only be secured at specific distribution, so what can the serviceman do about it?)

Plus a host of other factors.

I used to be very conscientious when I faced a customer and had to order an item. I now am falling in a pattern of making excuses to the customer or calling the distributor directly from the customer's home so he knows, that I have placed the order. Even when this is done after having been assured that it was in stock I have waited for a month for the orders to be filled.

I have no quarrel with certain non-functional items, but I do have with functional items that prevent the customers from using his appliance for more than a reasonable time. Also the fact that the more complex the appliance it should be designed for easier service of parts as the labor cost has risen very high. A serviceman can spend easily two hours to get at a part only to find it must be replaced. That means putting the appliance together again. Ordering the part and then disassembling the appliance in order to replace the parts. All this cannot always be charged to the customer. Westinghouse I'm glad to see has at least on their '58 Ranges gone to standardization, why it took all these years I wouldn't know even their sales, production, design dept. cry for something to shout about.

Coming back to the attitude of manufacturers and distributors. I have attended a lot of service schools and brought this matter up and the answer one gets is that other manufacturers have others or the same problems. And if the customer gets dissatisfied he can only purchase so many nationally advertised brands. In other words the *few big names* swap customers.

I have seen and read many of your editorials and I believe you may be able to do much (certainly more than we as individuals) to direct this to the attention of responsible persons.

I believe we as service engineers have a lot of justified complaints coming to us.

Some manufacturers won't give out service information. The justification they give is that they have adequate representation and if they entrusted it to the general serviceman the customers would either be cheated or the job won't work properly. To this I say nonsense. If we could receive proper information and parts the chances of failure would be low.

If on the other hand a man wants to cheat a customer he doesn't need information or proper parts, that particular person knows how to get along fine without this.

Hoping that you may have some article along this line.

HEINZ A. WOBSER

Vacuum Pumps

They Remove Moisture Better Than Compressor and Are More Effective Than Oil Bath for Leak Detecting, RSES Hears

CHICAGO—"It is illogical to assemble manufactured units which have been thoroughly dried, cleaned, and evacuated then connect them to piping which has lain around in the rain for four days."

This point was made by H. G. Saunders, assistant to the sales manager, Kinney Pump Div., New York Air Brake Co., when he spoke at the annual meeting of the Refrigeration Service Engineers Society here recently on the application of vacuum pumps in refrigeration and air conditioning.

"Even tubing which has just been stored indoors, unless capped, will contain adsorbed moisture on the walls—often more than enough to cause difficulty in the system. Jobs which have been opened for repair also may pick up moisture while they are open.

Why Pump Is More Effective Than Compressor

"The most effective method of removing such moisture is by the use of a high vacuum pump. The compressor won't do the job," Saunders stated, "since it will only pull a vacuum of about 26½ in., 28 in. at most. At this point water boils at 120° F.; obviously it would be difficult to boil the water away."

Saunders gave a brief description of the operation of vacuum pumps, including a discussion of the difficulty of removing the last few molecules of a gas when the vacuum is near absolute zero. He explained that the inability of a compressor to pump a full vacuum is chiefly due to the necessary head clearance which must be maintained in a reciprocating compressor. Rotary pumps do not have any head clearance as such, and they maintain their speed of operation even at very low pressure (high vacuum) levels.

A clean, correctly operating vacuum pump can pull a vacuum of greater than 29.9 in., he said, and the vacuum is then expressed in microns, rather than inches or millimeters.

Using Pump as Leak Detector

"The refrigeration service engineer will use a high vacuum pump not only for cleaning and purging, but for leak detection. Leak detection with such a pump is far superior to putting a hose from the discharge side of the pump into a bath of oil and looking for bubbles," Saunders pointed out. "This is especially true when we are looking for very small leaks.

"In fact, the value of a good vacuum pump is so high that some manufacturers are now insisting that their franchised dealers equip themselves with such a pump and with high vacuum gauges."

Saunders showed that it is best to use the largest diameter pipe possible when evacuating. "A ⅝-in. tube will evacuate seven times faster than a ⅜-in. tube, for example. If the run is much longer than 25 ft., use a 1-in. pipe if possible. Be sure that flared fittings and joints are in good condition; any rough spots can slow down evacuation.

"Since the high vacuum which we pull must reach into every nook and cranny of the system, give it time to operate," he warned. "Give some thought to gas flow along the long lines and directed passages. In this regard, I don't believe a compressor would do a good degassing job and it could never do the evacuation job required.

"Test the vacuum pump in the shop before taking it into the field, being sure to use a good vacuum cut-off valve so that you can determine whether it is the pump or the test system which is leaking. In the field, use a manifold which will allow a gauge application on either side of the cut-off valve.

"You'll need an expensive high vacuum gauge to serve as a master gauge and to compare other gauges in the shop. Don't bank on cheaper gauges; they just won't do the job," Saunders insisted.

Procedure for Evacuating System

He then outlined a general procedure for evacuating a system. The procedure included the following basic steps.

Install a high vacuum gauge between the shut-off valve and pump.

After applying a pressure test with carbon dioxide or nitrogen, to test for leaks, reduce the pressure to atmospheric. ("Incidentally, I have seen many systems which passed the pressure leak test, but which showed leaks under high vacuum.")

Pull the high vacuum.

Close the vacuum valve at the pump and immediately observe the zero on the gauge. Allow to stand for five or 10 minutes.

If gauge rises, evacuate again and hold for five or 10 minutes. This amount of time allows the vacuum to reach deep into the system and allows any water to vaporize.

If repeated evacuation cannot hold the system down, either there is an undetected leak in the system or the system is exceptionally wet. ("If a unit can be worked on in the shop, it is possible to apply heat with infrared lamps while the vacuum is pulled; this speeds up evacuation-drying considerably.")

Either find the leak or install another drier and repeat the evacuation process.

On a capillary unit, run a vacuum on both sides of the capillary.

Saunders pointed out that very little of what goes wrong with a vacuum pump can be repaired in the field, although such pumps have a good service record. About the only spare parts which the serviceman should carry are discharge valve assemblies and washers and filters.

Asked if he recommended the use of a thermometer to determine the boiling point of the water, and thus indirectly the amount of vacuum, Saunders answered that he considered such a method not as accurate as the use of a good high vacuum gauge.

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"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 430 W. Fort, Detroit 26, Mich.
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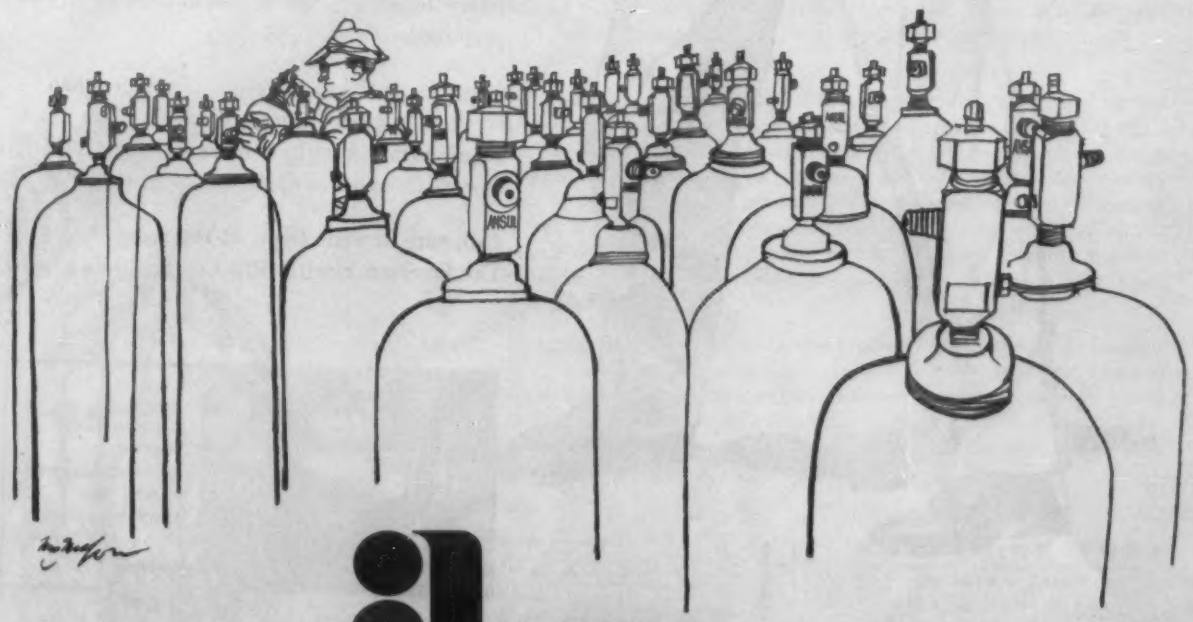

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Giordano's Prediction

1958 Seen as 'Most Successful' Year In Room Air Conditioner History

MASPETH, N. Y.—This year should be the most successful the air conditioning industry has yet seen, in the opinion of Salvatore Giordano, chairman and president of Fedders-Quigan Corp.

As a whole, 1958 should see a sales push that should more than regain the ground lost in 1957, he said in a forecast.

Giordano predicted that the year "will make its mark in two respects: the growing popularity of heat pump air conditioners; and the introduction of the 'midget-size' room air conditioners."

Even though last year was a disappointing one, the Fedders chieftain explained, 1957 was still second-best in history. About 1.6 million room air conditioners were shipped, compared with 1,828,000 the preceding year, a 12.6% decline.

In dollars, he continued, manufacturers' shipments were worth about $276 million as against $291,445,000 the previous year, a dip of 5.3%. In residential air conditioning, shipments dropped off 15.2% from 165,000 in 1956 to 140,000 last year, he said.

A general slump throughout the appliance industry, rather than any particular weakness within the air conditioner field, was held responsible by Giordano for the decline.

This year will see the introduction by almost all manufacturers of a lightweight midget-sized room air conditioner, Giordano foresaw.

"These units are somewhat of a regression for the industry in that they produce less cooling than today's standard models at a time when the industry is working for greater efficiencies," he said.

"However," the executive pointed out, "these midget models, if properly applied, will be a boon. They will be ideal for bedrooms and other rooms of similar low cooling capacity requirements."

In styling, Giordano sees a general reduction in dimensions of 1958 air conditioners. More manufacturers will size their units to the thin and low design which "became so popular last year," he said.

Through-the-Wall Installations To Grow

Air conditioners designed for through-the-wall installation are expected to gain considerable ground this year as the construction of private and multiple dwellings is scheduled to increase, he went on. These through-the-wall units are growing at a rapid rate as more and more new apartment houses plan for their use, he added.

Giordano said an anticipated million-plus residential housing starts in 1958 "should provide the increased market for home central air conditioners."

Even though inventories are somewhat higher than a year ago, the Fedders president outlined, he believes there will probably be an adjustment in production rate compared with last year so that inventories will level out prior to the height of the selling season.

Existing inventory, he noted, is found basically at manufacturer and distributor levels leaving the retailer in a free-to-buy position. He estimates retail stocks are about 1-2 units per store, "a necessary figure if only the most meager year-round display is maintained."

Dollar Volume Seen Reaching $323 Million

"The coming year should be the most successful the air conditioning industry has yet seen," Giordano forecast. "Total industry shipments of room units should be 1.9 million units, for both reporting and non-reporting companies. Dollar volume should reach about $323 million. Both figures would be new records. In the residential field, 1958 shipments are estimated at 165,000, matching the 1956 record."

One reason Giordano has for an optimistic outlook for this year is development of a reverse cycle heat pump room air conditioner that will heat, as well as cool, in any part of the country. Last year about 2% of room air conditioners shipped, he said, were of this reverse cycle model. About 10% of 1958 units will be similar.

He thinks all levels of the air conditioning industry will benefit from this advance. Manufacturers will lengthen the production year. Distributors and retailers will merchandise on a year-round basis. And the consumer can use the air conditioner through the four seasons of the year. In this respect, the heat pump "fills a need uncovered by market research studies: that many units were not purchased simply because the consumer could not justify the expense for an appliance used only during the summer."

Room air conditioners with lower electrical power needs should result in an increased market for larger capacity units this year, he said. For the first time the industry will be offering a 1½-hp. model made to operate on standard 115-v. house current, he indicated.

Cory Appoints N. H. Schlegel

CHICAGO — J. W. Alsdorf, president of Cory Corp., has announced the appointment of N. H. Schlegel to the newly-created post of vice president in charge of marketing for the corporation.

N. H. Schlegel

Creation of this new executive post is in line with actions recently taken by many other leading corporations in the U. S. A. as a means of broadening the scope of sales management to include the overall responsibilities for marketing direction, it was pointed out.

In his new position, he will direct the marketing activities of the Cory, Nicro, Fresh'nd-Aire, and Mitchell divisions—and serve in a staff advisory capacity on marketing problems for the Autopoint Co., Cory Corp. (Canada) Ltd., and The Flavor-Seal Corp., subsidiaries of Cory.

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FHA Revises ME-13 Bulletin--

(Concluded from Page 1)

providing water vapor barrier ground cover material in crawl spaces.

3. It eliminates a requirement for directional vanes on supply outlets of combined heating and cooling ducts that must be adjustable when necessary.

4. ME-13-A asks contractors to supply, among their exhibits, location, size, number, and installation details of room or zonal air conditioners, except for room air conditioners designed for installation in windows or walls or for use as consoles. ME-13 did not require this.

5. In specifying that inside design conditions shall not be higher than 80° F. dry bulb and 50% relative humidity, ME-13-A adds this exception: in those areas where design dry-bulb temperatures exceed 100° F., a 20° F. differential between outside and inside design temperatures may be used.

6. ME-13-A does not require that piping used for conveying condenser cooling water shall be of a corrosion resistant material "acceptable to the local FHA field office." It does require that dielectric connectors shall be used between ferrous and nonferrous piping in the cooling water circuit.

7. ME-13-A permits use of capacity rating conditions in ASRE standard 16-56 as well as applicable ARI standards. It also asks the contractor to furnish FHA with the total KW input to the system at these standard rating conditions.

In addition to these changes, FHA has also rewritten a few requirements, without, however, changing their meaning significantly.

Text of ME-13-A will appear in a future issue of the NEWS.

Death Notices

Edgar F. Jackson, 60, vice president and sales manager of Ben-Hur Mfg. Co., home freezer manufacturer, died recently of a heart ailment at his home in Milwaukee. Although ill for the past year, he had remained active in company operations.

* * *

Herbert Willerton, 71, a retired Philadelphia refrigeration engineer, died recently in Clearwater, Fla.

* * *

Thayer Francis, senior partner of Francis Associates, consulting engineer, died recently in St. Luke's hospital, New Bedford, Mass. He was 63.

A charter member of Boston Air Conditioning Bureau. Francis was also a member of American Society of Refrigerating Engineers.

* * *

Dwight D. Kimball, retired consulting and designing engineer, died in New York City recently. He was 83.

Kimball engineered the heating and ventilating system for Madison Square Garden when it was built in 1925. He also worked on many other buildings, including the Missouri State capitol, the Olympia, Wash. state capitol, and structures at Yale, Princeton, and Cornell universities.

He was a former president of the American Society of Heating & Air-Conditioning Engineers.

* * *

Jacob R. Muellner, owner of a refrigeration repair company, died in Cleveland recently after a six-month illness. He was 53.

In 1948 Muellner became associated with the Ohio Soda Fountain Repair Co. and three years ago became its owner.

* * *

Francis (Jim) McGonagle, Proprietor of Jim's Refrigeration Service in Canton, Ohio, died of a heart attack recently. He was 55.

* * *

George A. Polansky, owner of the George A. Polansky Refrigeration Service, died in Dallas recently after a long illness. He was 45.

Heat Pump Line--

(Concluded from Page 1)

40 tons—with multiple compressors."

Air-to-air models: "An expanded line including 3, 5, 7½, and 10-hp. models in two sections with remote compressor. Other models available up to 30 hp."

Water-to-water models: "Competitively priced models from 2 to 50 tons. Their compactness was demonstrated with a 10-ton unit which occupies only 28 by 28 in. of floor space and stands only 44 in. high."

Water chillers: Also available in same sizes as above.

Air-to-water models: The company stated there was increasing interest in this type heat pump, and it would continue to build the equipment to customers' specifications.

Harry W. Jobes, general manager of the firm, said the "enthusiasm shown completely exceeded our expectations, and orders placed spontaneously for the new equipment actually overtax our newly-expanded production.

"We have always had a strong conviction that a complete line of heat pumps should be made available to the industry to justify serious selling. The variation in sizes, models, and types must be equal to or greater than selection offered in straight air conditioning equipment."

TWO examples of Typhoon Prop-R-Temp water-to-air heat pumps made by Typhoon Heat Pump Co., Div. of Hupp Corp.

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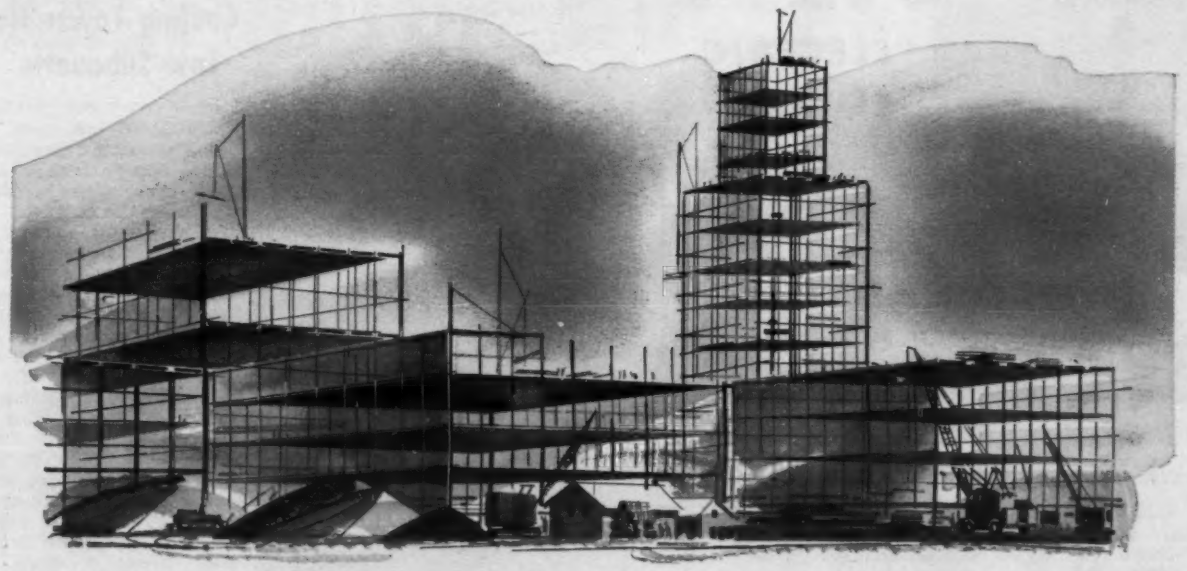

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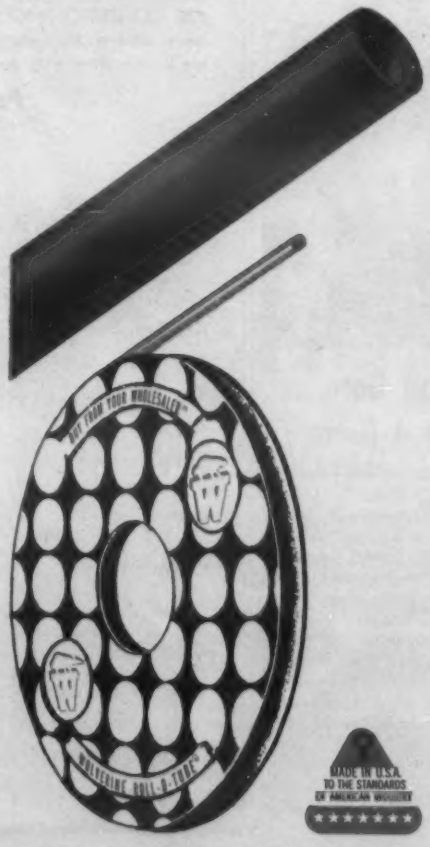

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One of the easiest ways to provide this kind of service is by stocking . . . and recommending . . . the tubular products manufactured by Wolverine Tube.

For example, supposing that one of your customers has picked up the air conditioning contract for a hospital, hotel or office building. To meet his needs, Wolverine produces copper water and refrigeration tube in straight lengths and rolls in a wide range of sizes. Rolls of tube are available in the round Wolverine Roll-O-Tube® carton that can be used as a reel. Into the bargain, Wolverine refrigeration tube is capped with a plastic end seal that gives positive protection against moisture and dirt, simplifies threading operations and eliminates cutting off tube ends. It is reuseable.

By recommending these Wolverine products you assure your customer of refrigeration tube that is clean, dry, mirror bright and always easy to bend. Remember, too, that in Wolverine you have an "all-in-one" source as well as one that always tells your customers to "BUY FROM YOUR WHOLESALER." For complete information write for your copy of the Wolverine Refrigeration Catalog.

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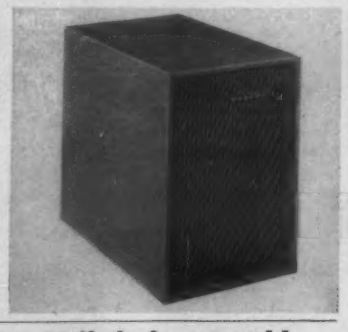
For more information about products advertised on this page use Information Center, page 26.

Dehumidifier Has Automatic Overflow Cut-Off



——KEY NO. H-210——

GREENVILLE, Mich. — New Gibson Refrigerator Co., Div. of Hupp Corp. dehumidifier features automatic overflow cut-off. Unit turns off and red light flashes when water container is full.

Added to Gibson's '58 line to meet growing market demand, the new dehumidifier removes 3 to 4 qts. of water from the atmosphere per day, the company said. Major engineering features include "Scotch Yoke" compressor, all-copper circular coils.

Accessory Draws, Mixes Milkshakes Quickly

——KEY NO. H-211——

SEATTLE—Perfectly mixed milk shakes can now be drawn and mixed in less than 10 seconds with the new Sweden Freezer Mfg. Co. "ShakeMixer" accessory, the firm claims.

Designed to slip easily and quickly onto the front of the ShakeMixer, this efficient unit mixes shakes as fast as they can be drawn. The flavor is stirred in automatically with no increase in drawing time, and all of the shake and flavor is mixed thoroughly from top to bottom. Total preparation time is reduced through elimination of the extra step of separate mixing, it was added.

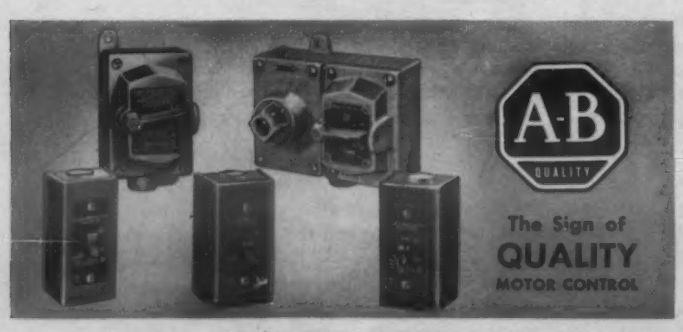
Biggest step forward in delivery truck refrigeration in years!

New, unique design ALL-ELECTRIC system provides ABSOLUTE ULTIMATE IN DEPENDABILITY. Closest thing to "SET IT AND FORGET IT" refrigeration ever achieved. Big, uniform capacity at lowest operating, maintenance cost.

110-V standby. Nose, side, skirt mountings. Proved in use by nationally known firms.

DEALERS
Get in on big profits. Choice territories still open. Write for details — FREE CATALOG.

COLDMASTER TRUCK REFRIGERATION DIVISION
Construction Machinery Company
Waterloo, Iowa

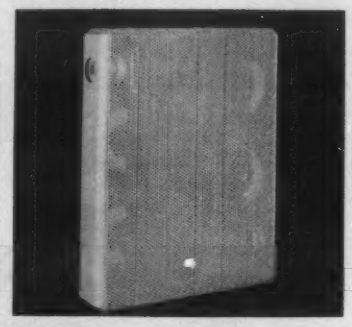


DON'T RUN THE RISK OF SMALL MOTOR BURNOUTS!

At an insignificant cost—compared with the "loss" of a motor—motors rated 1 hp or less can be provided with the same reliable overload protection, without which you would not operate larger motors. The Allen-Bradley Bulletin 600 has a built-in thermal breaker which remains accurate and dependable in its overload protection—no matter what the operating conditions may be.

The rugged, snap action switch mechanism of the Bulletin 600 makes "reasing" of contacts impossible—long contact life is assured. Available in general purpose, watertight, and explosion-proof enclosures. All A-B distributors—the control headquarters in your area—carry Bulletin 600 small motor starters in stock. Allen-Bradley Co., 1313 S. First St., Milwaukee 4, Wis. In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

ALLEN-BRADLEY
SOLENOID MOTOR CONTROL
QUALITY



Radiators Feature Box-Type Housing

——KEY NO. H-212——

PITTSBURGH—A standard line of steam and hot water radiators, specifically designed for use in mental and corrective institutions, is now being manufactured by Shaw-Perkins Mfg. Co.

Known as the Shaw model I, the line features a box-type housing of heavy, closely-perforated steel which completely covers the interior construction. Tampering and insertion of foreign matter is thus prevented, and thorough cleaning is accomplished by hosing down.

Entire assembly—housing, heating fins, and copper tubing—is permanently bonded together to form a one-piece unit that field tests show is indestructible in institution service, the company claims.

——KEY NO. H-213——

NEARLY 500 lbs. of frozen food can be stored in the new Kelvinator freezer that is 31 in. wide and 63 in. high. This 14-cu. ft. "Style Mark" model has square-corner styling and "Magic-Stor" feature that holds packages and cans in door shelves.

Elevating Tail Gate Affixed by 4 Bolts

——KEY NO. H-214——

EMERYVILLE, Calif. — A new elevating tail gate made by H. S. Watson Co. known as the "Weight Lifter," powered model, mounts underneath a pickup to the truck frame with four bolts.

It is 12 or 6-volt battery-electric-hydraulic powered, with the reservoir, pump, valve, and control switch all in one unit. This control package mounts in a convenient place on the side of a truck body, with only the leads to the battery to hook up. Unit has an 800-lb. lifting capacity, and according to the manufacturer lifts this load in five seconds.

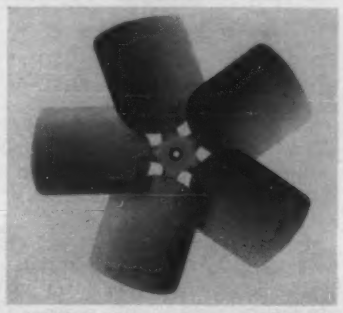
Offers 5-Bladed Reduced Axial Depth Fans

——KEY NO. H-215——

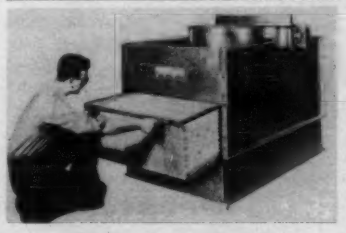
TORRINGTON, Conn.—New A series fans, "Radiax" blower unit, and a 15-in. blower unit have been offered by the Torrington Mfg. Co.

Five-bladed A series fans provide reduced axial depth with optimum air flow and high operating efficiency. The reduced axial depth has been achieved with an added blade and by original design of the symmetrically-patterned cambered blades.

Low-cost A series fans are available in 16, 18, and 20-in. sizes and are designed particularly for such applications as attic air conditioning units, cooling towers, and central or remote air-cooled condensers.



Radiax blower, a symmetrically constructed direct-drive unit, is available in four models covering a flow range from 500 to 1,500 c.f.m. against back pressures.



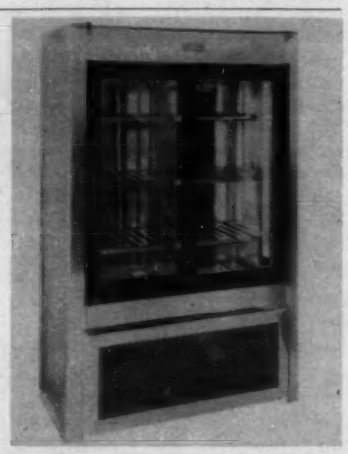
Cooling Tower Has Low Silhouette

——KEY NO. H-216——

CHICAGO — A new, compact, low silhouette general purpose cooling tower with a 15 to 200 g.p.m. capacity has been announced by the Binks Mfg. Co. The unit measures, depending on capacity, 44 to 84 in. in height.

Compactness of the new tower was made possible through the use of multi-finned internal decking constructed of non-corrosive plastic specially compounded for use in cooling towers. The notched plastic sheets are claimed to provide four times as much water to air exposure as conventional towers.

No nozzles are required to effect initial water break-up. Water enters at the tower top under a low head of pressure. Gravitational flow carries it down over the multiple plastic decks mounted in two easily removed drawer-like receptacles at each end.



Adds Glass Door Display Cases

——KEY NO. H-217——

HUDSON, N. Y.—Foster Refrigerator Corp. has announced a complete line of sliding glass door display refrigerators, self-contained and remote.

These refrigerators with fluorescent lighting are designed for self-service and display of desserts, salads, beverages, etc. because the sliding glass doors afford full vision of interior.

Both self-contained and remote models are available as pass thrus with sliding glass doors on both sides, or one side only.

Information Center

For *more information* on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

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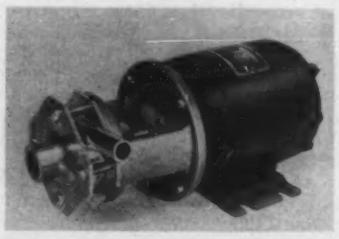


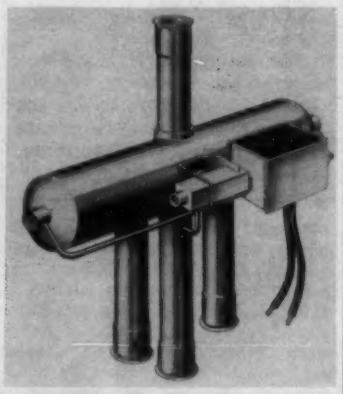
Centrifugal Pump Weighs 5¾ Lbs.

——KEY NO. H-218——

NEWBURGH, N. Y. — A low-cost, stainless steel, centrifugal pump of high efficiency, and weighing 5¾ lbs., including pump and motor, has been announced by Oscar Fisher Co., Inc. here.

Model O-10 pump has a capacity of 12 g.p.m. for water or thin slurries, and will generate 55 lbs. pressure at shut-off, the company said.

Pump is close-coupled and is fabricated entirely of type 316 stainless steel, with a seal of the teflon-asbestos type. It may be mounted in any position and the outlet may be rotated 360°.



Designs Reversing Valves for Heat Pumps

——KEY NO. H-219——

COLUMBUS, Ohio — Two new models of slide-type reversing valves designed primarily for use in heat pump control systems have been introduced by Ranco Inc.

New V25 and V26 slide-type reversing valves are applicable to almost any situation requiring a reversing valve, "they have many special features making them extremely desirable for heat pump control applications," the firm said.

Special features of the new V25 and V26 valves include an absence of metal-to-metal contact to minimize wear due to dirt and corrosion and a nylon transfer slide to reduce friction and act as a thermal conductor between the hot and cold to minimize heat exchange and pressure differential operation to eliminate possibility of stops in mid-stroke.

Smoke Gun Tests Air Movement

——KEY NO. H-2110——

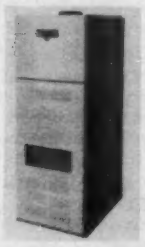
COOPERSVILLE, Mich. — A new, inexpensive smoke test gun for use in checking air movement in heating or cooling installations has been announced by Air Control Products, Inc. here.

This unit requires only a cigarette to produce a dense, directed smoke stream to give a visual check of the air movement in any heating or cooling installation, the manufacturer states. Simple to load—unscrew holder from pump, insert lighted cigarette and screw holder back into end of pump. A few strokes of the plunger handle will force the smoke through the jet in just the right volume.

Redesigns Oil, Gas Counterflow Models

——KEY NO. H-2111——

COLUMBUS, Ohio—Armstrong Furnace Co. has announced a "new look" in its completely redesigned counterflow furnace models.



Both oil and gas fired furnaces will be available in the new line. The oil-fired units will range in size from 84,000 to 125,000 B.t.u., the gas from 70,000 to 150,000 B.t.u.

Ease of installation is highlighted. Units are completely assembled and wired at the factory. All that is needed for these furnaces to start heating is to set the unit in place, attach the fuel lines, and bring in the power.

A specially constructed round heat exchanger with a wrap around radiator that is both gas and fume tight insures safe, efficient heating over a long period.

Develops 'Speed-Fastening' Pipe Insulation

——KEY NO. H-2112——

TRENTON, N. J.—Development of No. 101 pipe insulation, a new speed-fastening, high-temperature pipe covering has been announced by the Baldwin-Hill Co.

Built-in tie wires eliminate the need for conventional tie wires so that insulation can be applied to large diameter lines as rapidly as more costly molded pipe coverings, the firm said.

Specially felted from high-temperature, moisture-resistant spun mineral wool, the insulation will withstand temperatures to 1,200° F.

Exterior surface is faced with a metal fabric of 16-gauge wires welded in a 2 by 2⅜-in. rectangular mesh and held in place by 16-gauge wires tied through the spun wool to an inner facing of 1-in. expanded metal lath.

Has Wide-Range Remote Bulb Temperature Control

——KEY NO. H-2113——

WATERTOWN, Mass. — United Electric Controls Co. is now including type F7, a wide range remote bulb temperature control, in its line of standard remote temperature controls.

This sensitive, compact unit is designed for use on ovens, water baths, test cabinets, hot plate presses, incubators, air conditioning units, and other similar applications, the manufacturer indicated.

Relief Valves Offer Adjusting Key

——KEY NO. H-2114——

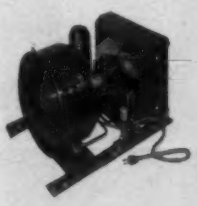
PERRYSVILLE, Ohio — Mansfield Sanitary, Inc. has announced three water system relief valves equipped with a combination test lever and adjusting key.

New models are listed as No. 452 for protection against excessive pressure in cold and hot water lines (preferably cold); Nos. 453 and 495 for both temperature and pressure relief.

According to the manufacturer, all testing lever-equipped pressure and temperature-pressure relief valves are easily adjusted to desired pressures. This is accomplished by use of the calibrated test lever, which is shaped to fit exactly into the slot on the top of the pressure cap, the company said.

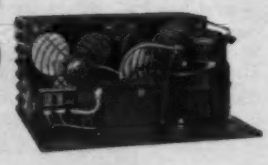
KELVINATOR WHOLESALERS

OFFER YOU A WIDER CHOICE OF MODELS FROM ONE DEPENDABLE SOURCE



SEALED UNITS

⅛ H.P. through 2 H.P.

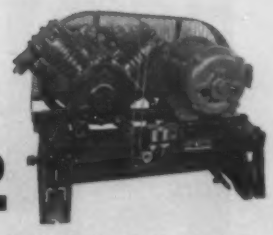


COMPRESSORS

⅛ H.P. through 2 H.P.

OPEN UNITS

¼ H.P. through 5 H.P.



NEW KELVINATOR 5-YEAR WARRANTY PLAN

is now included in the factory cost of all sealed condensing units. It's low in cost, labor-saving and gives you quick replacement service. See your Kelvinator wholesaler for details—today!

Kelvinator

SPECIALISTS IN REFRIGERATION SINCE 1914

Men on the Move . . .

Virginia Smelting Co.—Appointment of VICTOR C. WALLING, Kirkland, Wash., to represent the industrial, refrigeration, and aerosol sales departments in Washington, Oregon, Idaho, Montana, and Utah has been announced. He was formerly with Mallinckrodt Chemical Co. and Hydraulic Supply Mfg. Co.

Dunham-Bush, Inc.—LARRY A. DONNENWIRTH, previously with Lawson Sheet Metal in Sacramento, Calif., has been named sales engineer there.

Bally Case & Cooler Co.—WILLIAM J. WAWRZONEK, formerly a manufacturers' representative, has been appointed district sales manager for Wisconsin, Minnesota, and Iowa. He will operate out of Milwaukee.

Trane Co.—ROGER HAMILTON has joined the Cincinnati sales office as sales engineer, and WILLIAM AMES has the same assignment in Syracuse, N. Y. ROBERT R. WILLIAMS, with the Birmingham, Ala. branch, has been assigned to Pensacola, Fla. In addition, E. C. McLAUGHLIN has been named purchasing agent for the manufacturing division in La Crosse, Wis. and L. A. BREWER to the same job at the new Clarksville, Tenn. plant.

Air Moving & Conditioning Association (Detroit)—ALBERT S. SHEPPARD has been named staff engineer to be concerned chiefly with the new program for certifying performance ratings of air moving equipment. He was in test and development engineering at Chrysler Corp. previously.

Vilter Mfg. Co.—Promotion of WHITNEY I. GRANT to assistant chief engineer and ROLF BOEHM to the newly-created post of contracting coordinator has been announced.

York Div., Thoben Elrod Co. (Atlanta)—JOHN P. STRANGE has been appointed manager. He was formerly sales manager of Industry Sales Corp. in New Orleans.

Lonergan Coolerator Div., McGraw-Edison Co.—EDWARD D. FARRELL has been named to direct expanded operations as regional manager in Missouri, Kansas, Iowa, Oklahoma, Nebraska, Colorado, Wyoming, and southern Illinois.

Carrier-Houston Corp. (Houston, Texas)—BURTON FAIGEN was named assistant sales manager and GEORGE R. HARROD, JR., formerly assistant chief engineer, succeeds Faigen as chief engineer for this Texas Gulf Coast wholesale distributor.

Air Conditioning Co., Inc. (Los Angeles)—Election of RICHARD McKIBBEN and KENNETH SIMON to the board of directors has been announced. Both are executive committee members and have been project engineers for the firm since 1950.

Hotpoint Co. — HOWARD J. SCAIFE, marketing manager of refrigeration department, has added the duties of acting manager, marketing counseling. J. F. CARROLL has been named refrigerator and freezer product planning manager, D. H. GRIGSBY, sales planning manager, L. A. WOOD, air conditioner product planning manager, and W. C. SANFORD, marketing administration manager. JOHN S. HICOK has been appointed regional manager of Hotpoint Appliance Sales Co. for the eastern region with New York City headquarters. He has been responsible for refrigerator, freezer, and air conditioner sales in that area.

Mueller Climatrol, Div. of Worthington Corp. — WALTER W. BRAATZ has been appointed to the newly-created post of supervisor of quality control. He has been with the firm's sales engineering department.

American Air Filter Co., Inc.—IVAN W. DYER, former development engineer, has joined the Earl W. Graham Co., Detroit, as field sales engineer. He represents AAF for its dust control, engine and compressor, and heating and ventilating industrial products.

H. W. Baker Co. (San Francisco)—AL MUDICA has been appointed sales engineer for this northern California manufacturer's representative. He was with Acme Industries, Inc.'s research laboratory and application engineering department at Jackson, Mich.

Cutler-Hammer, Inc.—A branch sales office has been opened in Appleton, Wis. with LEONARD R. RISSE in charge.

Carrier Engineering Ltd. (Toronto, Ont., Can.)—ROY W. RAHME has been named manager of the Calgary, Alta., Can. office.

Temco, Inc. (Nashville, Tenn.)—L. A. TANKSLEY has been named to the newly-created post of production superintendent. He has been general supervisor of metal fabricating and painting. JAMES E. BRADFORD was named manager of production planning, a new position. He previously was supervisor of methods and standards.

Maytag Co.—RICHARD E. TUPPER, former assistant to the sales promotion manager, has been appointed to the newly-created position of freezer sales coordinator. ROGER F. STAHLIN, field sales assistant, has been named branch freezer specialist in Kansas City, Mo., and C. E. (GENE) HUGHES to the same new post in Minneapolis. Hughes was zone freezer manager in Iowa.

CORRECTION

A press release published in the Jan. 13 issue of AIR CONDITIONING & REFRIGERATION NEWS gave the impression that Mrs. Alfred C. Buensod had been elected chairman of Buensod-Stacey, Inc.

Actually, Mrs. Buensod was elected a member of the board of directors to fill the unexpired term of her late husband, who was chairman, the company explained.

We're Specialists In

Refrigeration | Air Conditioning | Electric Motors, Too!

SAVE MONEY. time, effort by ordering from this complete catalog.

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Over 10,000 items...most complete list in the world... carried in stock! You'll find them all in the NEW Harry Alter Dependabook No. 167 for Fall-Winter, 1957-58.

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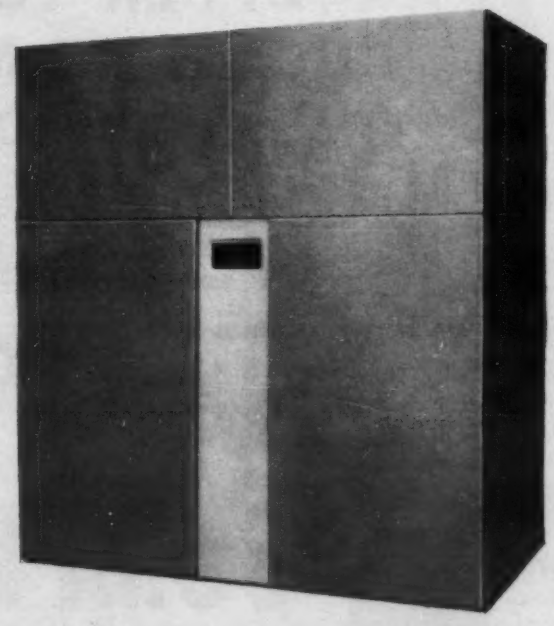
FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG HOUSES

BLUEPRINT for LEADERSHIP
in commercial and industrial air conditioning

BLUEPRINT for more air conditioning sales for *big* projects with new 30-ton *factory-assembled* central station systems.

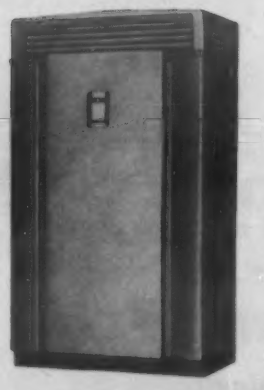
General Electric dealers are equipped to go after the big projects in a big way. Installation after installation has proved convincingly that large projects can be air conditioned more efficiently at less cost with General Electric *Factory-Assembled* Central Station Systems—now available in water-cooled self-contained units of 20, 25 and 30 ton capacities.

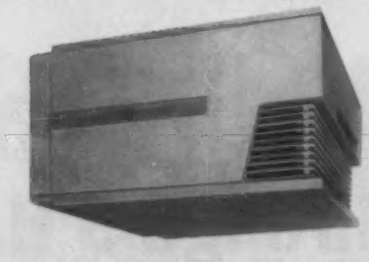


BLUEPRINT for knocking out competition fast with *new air-cooled systems* up to 20 tons.

Handsome new General Electric *Factory-Matched* Air-Cooled Split Systems enable G-E Dealers to capture the big projects where air-cooled equipment is the best answer. No need for "patch-work" installations when large capacity air-cooled systems are required.

BLUEPRINT FOR ALL TYPES OF ZONE-BY-ZONE INSTALLATIONS - THESE FAMOUS GENERAL ELECTRIC UNITS





Self-contained ceiling-mounted units (take no floor space)—water-cooled in capacities of 3 to 7½ tons—air-cooled in capacities of 3 and 5 tons.

Self-contained water-cooled floor-mounted units (may be stationed in or away from area served) in capacities ranging from 3 to 15 tons.

Air-cooled, ceiling-mounted split systems in capacities of 3 to *10 tons*.

For full information on General Electric's Blueprint for Leadership in commercial and industrial air conditioning MAIL COUPON.

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For more information about products advertised on this page use Information Center, page 26.

Refrigeration Problems
And Their Solution
(As Written by Paul Reed)

The late Paul Reed, one of the refrigeration industry's most respected writers and teachers, wrote a column on "Refrigeration Problems and Their Solution" which was published regularly in AIR CONDITIONING & REFRIGERATION NEWS for more than 15 years.

Readers throughout the years have hailed this written material as some of the most practical and helpful that has ever been published. Fortunately, the author had an opportunity to revise some of this material and the NEWS is currently re-publishing it.

Questions and Answers on Motors

QUESTION: What is a "resistance start" motor? I have been told that the motors used on hermetic units are "resistance start" motors. Also, I have heard them called "split-phase" motors and "condenser" motors. Which is correct, or is there some difference?

ANSWER: This is a rather long story; somewhat too long to give here at this time. To fully understand why a single-phase motor develops starting torque, is necessary to understand impedance, reactance, and resistance and their bearing on "phase angle" and "power factor."

These matters are covered in Chapter 59 in Volume J-3 of "Refrigeration Problems."

TERM 'RESISTANCE STARTING' NOT CORRECT

Briefly, however, the term "resistance starting" as applied to single-phase motors, is not correct, although it is often used.

The split-phase and the condenser-start motors are practically the same as far as the motor itself is concerned. The split-phase motor has a main and a starting winding in the stator and it has no winding on the rotor.

In starting, both windings are in use, but when the motor gets up to about two-thirds speed, a relay (in the hermetic type or a centrifugal switch inside the motor, in the open-type motor) opens and takes the starting winding out of use. From then on, up to full speed and while the motor is running at full speed, only the main winding is in use.

This type of motor can start and bring up to speed about 1¾ times as much as its full load rating, which is what it can carry continuously. Under normal conditions, this is enough for starting a compressor *if* the suction and head pressures have been equalized either by a capillary tube or an unloader valve.

Practically all household refrigerators now use capillary tubes, so the split-phase motor has enough starting torque or "power" for the household refrigerator, small water cooler, and other small capillary tube systems.

If this motor is turned on before the two pressures are equalized, it is apt to stall and blow the overload protector, for it takes from four to six times as much torque to start a compressor as the motor will carry continuously, *if* the suction and head pressures are not unloaded; that is, if the suction pressure is low, say just a few pounds, and the head pressure is high, say a hundred pounds or more.

STARTING CAPACITOR CONNECTED WITH STARTING WINDING

So in order to give the split-phase motor that extra starting torque, necessary for expansion valve or float valve systems that do not equalize pressures during the off cycle, an electrical condenser or "capacitor" is connected in with the starting winding.

The split-phase motor with the capacitor added is now called a condenser-start or capacitor-start motor, and it can start and bring up to full speed three to five times as much load as it can carry continuously.

Essentially, the capacitor-start motor is a split-phase motor with a capacitor added, and many times it is possible in the field to add a starting capacitor to a split-phase motor and thereby give it a great deal added starting torque. However, the motor manufacturer does make some design differences between the split-phase and the capacitor-start motors, in order to get maximum results.

Without the starting winding, the split-phase motor is unable to get started at all. The starting winding gives the necessary starting torque because it causes the current to lag behind the voltage in the starting winding and thus produce an effect, as far as starting torque is concerned, much the same as if there were two currents, one "out-of-phase" or lagging the other, as in a two-phase motor.

The starting winding does this because of its inductive effect or inductive "reactance" rather than its resistance. Resistance only, does not cause a lagging or leading current. It takes "inductance" produced by a coil, or "capacitance" produced by a capacitor (an electrical condenser) to do that.

The split-phase motor gets its name from the fact that its starting winding "splits the phase" and produces the effect of a two-phase current.

The capacitor-start motor also splits the phase, but it goes further. If we wanted to be more specific and more exact, we might call a split-phase motor an "inductive-start" motor.

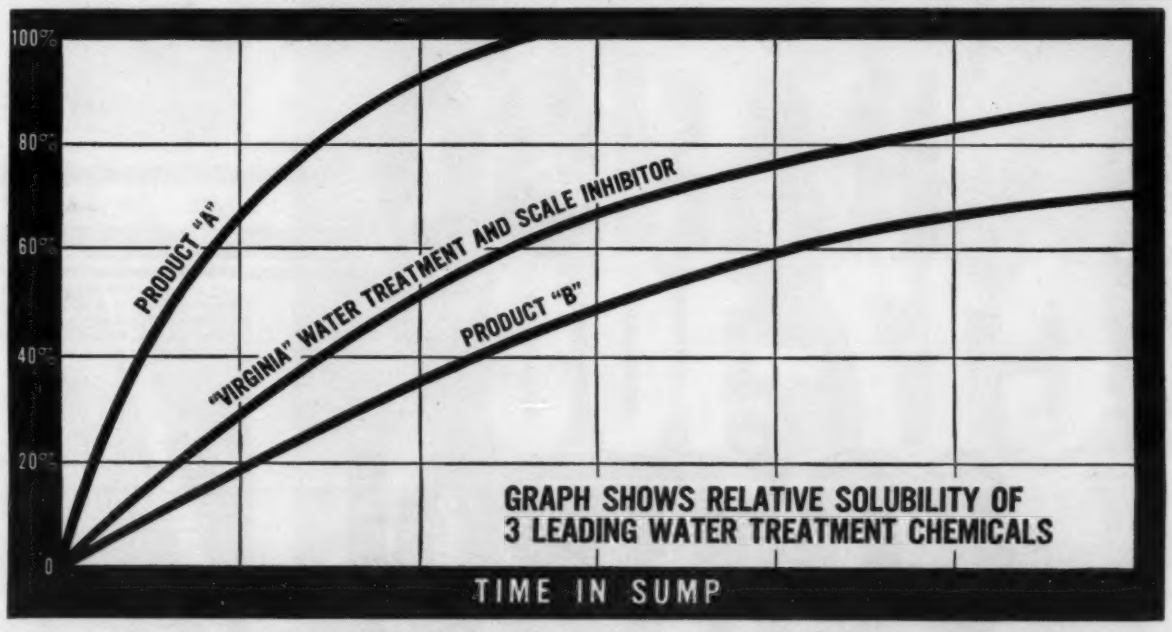
Henry V. Dick & Co. Rejoins Copeland Wholesaler Group

SIDNEY, Ohio — Henry V. Dick & Co., Charlotte, N. C., has been appointed authorized Copeland wholesaler for the Charlotte area, Copeland Refrigeration Corp. announced here recently.

The appointment renews a relationship with Copeland interrupted in 1954 until the present, it was noted.

The Henry V. Dick Co. will be a completely stocking wholesaler, with full volume inventories of Copeland compressors, condensing units, and replacement parts, the announcement said.

The company also will represent Copeland in the North Carolina cities of Asheville, Wilmington, and Winston-Salem, it was announced.



Note above how Product "A" dissolves too rapidly, with danger of sludging; Product "B" is too insoluble to provide sufficient chemical at any one time to prevent corrosion or scaling. "Virginia's" controlled solubility provides maximum protection to equipment.

YOU MUST SPECIFY "VIRGINIA" FOR MAXIMUM OPERATING LIFE AND EFFICIENCY OF WATER COOLED SYSTEMS

"Virginia" Water Treatment and Scale Inhibitor can be used in all water cooled air-conditioning and refrigeration equipment. Just scatter recommended quantity into sump. No feeder devices, plates or bags required.

"Virginia" Water Treatment and Scale Inhibitor undergoes precision control during its production. This assures a consistent solubility rate—best suited for maintenance of all types of water cooled air-conditioning and refrigeration systems.

Here's why it's so important to specify "Virginia" when buying supplies for servicing equipment: some products are more soluble than "Virginia's," and too much chemical goes into solution too rapidly, which results in periodic sludge buildups. Others are much less soluble, and not enough chemical is in solution at any one time to give maximum protection against corrosion or scaling.

"Virginia" Water Treatment and Scale Inhibitor is "right in the middle." One application will give maximum protection against corrosion or scaling without sludging, and maintains cooling capacity at peak efficiency. That's why you must specify "Virginia." Order from your favorite wholesaler. For *free* booklet "Water Problems and How to Correct Them", write Refrigeration Division, VIRGINIA SMELTING CO., 183 Jefferson St., West Norfolk, Va.

VIRGINIA Chemicals

ESOTOO • KINETIC CHEMICAL'S "FREON" REFRIGERANTS • V-METH-L CAN-O-GAS • PERMAGUM • PRESSTITE TAPE • KWIKWRAP SUNISO REFRIGERATION OILS • WATER TREATMENT CHEMICALS

Available in Canada and many other countries

MIGHTY MITE
THERMAL PROTECTORS

FOR MOTOR OVERLOAD PROTECTION

MECHANICAL INDUSTRIES PRODUCTION COMPANY
223 ASH STREET • AKRON, OHIO

Both Builder and Existing Home Owner Will Buy Quality If Properly Sold, Dealers Show

CHICAGO—Dealers who properly analyze the market and merchandise their products and services can sell quality heating systems in both the replacement and new home fields, contends Charles C. Owen, field sales manager, Janitrol Heating & Air Conditioning Div., Surface Combustion Corp.

How two firms do just that was outlined by Owen when he described operations of the Jenny Service Co., Inc. of Dayton and N. M. Adema & Sons of Buffalo at the 44th annual convention of the National Warm Air Heating & Air Conditioning Association here.

When Marvin Phillips took over Jenny Service, Owen related, he studied all available data on successful dealerships and engaged a business consultant.

"Essentially," Owen said, "he found that to be successful and to grow he should:

What To Do To Grow

"1. Identify himself with a brand name product.

"2. Establish a reputation for giving the consumer service.

"3. Acquire all possible technical knowledge available to our industry.

"4. Become a merchandiser."

A good product usually means good literature, for merchandising, Owen emphasized.

"In order to establish a reputation for giving service, Phillips actively uses direct mail to solicit service contracts," he explained. "To assure the kind of service the consumer wants, he makes certain that his service personnel is well trained in all of the requirements of a good system and whenever possible or schedules are available, sends his servicemen to manufacturers' and/or association-sponsored schools."

The firm offers 24-hour service, and the telephone is equipped with a recording device that tells after-hours callers what number to phone if immediate service is required, Owen said, adding that this device resulted in two prospects who were sold in less than 30 days after it was installed.

Detailed Files Aid Performance

Detailed files on each job also help Phillips perform better service, Owen pointed out.

Keeping up with the latest developments in application and stallation methods, business operations, and sales points are important to Phillips, who also carefully studies his own products and those of the opposition for comparative selling.

Regular advertising in local papers, on radio, and by direct mail help develop prospects for this dealer, who follows up with a detailed written proposal and a visualizer to show before-and-after pictures of other jobs.

What Proposal Includes

The proposal Phillips gives to prospects includes: a product folder; complete layout of the proposed system; calculation form showing heat gain and/or loss room by room; a copy of the form "Standards for Rating Heating Systems"; warranty samples; a copy of the Better Business Bureau booklet "When You Buy Air Conditioning"; and the bid form showing price and terms.

Somewhat different problems are faced by the dealer concentrating on the builder market, but quality systems can be sold here too, said Owen, discussing the Adema firm of Buffalo.

"In dealing with builders, particularly those building 100 or more per year, Adema soon found that timing was very important. When a builder sets up a schedule, all his sub-contractors have a schedule, and the builder soon finds out on whom he can depend. So Adema never makes a commitment if there is any doubt in his mind about his ability to meet his commitments," Owen declared.

"The successful builder knows the purchaser wants service after he has moved in. Unlike many heating contractors today doing new construction work, Adema goes beyond this and in many cases has serviced jobs, at no cost to purchaser or builder, for as long as two years.

"Constant contact at all levels of builder personnel helps Adema maintain his servicing reputation. Through these contacts of job sites Adema obtains records of owners' names. Thus the purchaser soon knows his heating contractor. Through these same sources service requests come to Adema direct, so the builder's office personnel or the builder himself is not bothered," said Owen.

"In other words, the builder knows when he uses Adema's firm, he has no worries insofar as heating and/or air condition-

(Concluded on Page 32, Col. 1)

RANCO
C17-100
CONTROL

APPLICATIONS OF C17-100

Versatile Air Conditioning Control

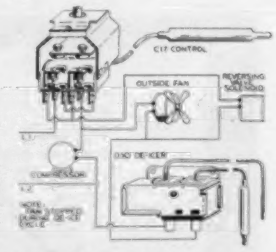
You'll find a versatility in the Ranco C17-100 Control which adapts to coordinated control of heat pump systems, compressors, reversing valves, circulating fans, resistance heaters and other equipment. Two single-pole, double-throw switches operate from a single temperature-sensitive, liquid-filled element and can be adjusted to cut in simultaneously or with staggered differentials.

In heat pump operation, the C17-100 controls the temperature demands in both heating and cooling phases, as well as the position of the reversing valve. Changeover from heating to cooling (and the reverse) is fully automatic, and an "off" period is automatically available during which compressor is shut down prior to the changeover.

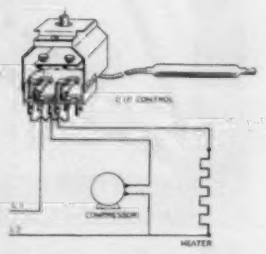
Wiring diagrams at left show a few of the uses for C17-100 in line voltage operation. The control can also be used for pilot duty in conjuction with low voltage (24 volts) relays or contactors and in other applications. For full details on how the C17-100 fits into your product, write Ranco Inc., Columbus, Ohio.

World's Largest Manufacturer of Refrigeration Controls

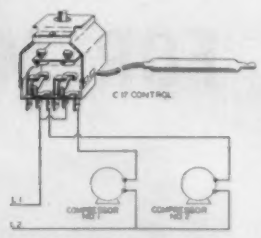
Ranco® INCORPORATED
COLUMBUS 1, OHIO



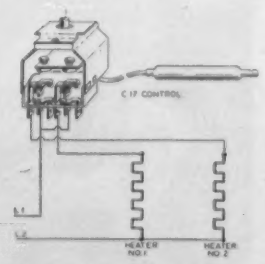
For Reverse Cycle with D50 De-Icer
Used with Ranco D50 De-Icer and V26 Reversing Valve to give completely automatic control in both heating and cooling phases. Automatically stops outside fan motor during de-ice cycle.



For Compressor Cooling and Electric Strip Heating
This suggested wiring scheme is for an air conditioner where the refrigeration system is used for cooling and where the unit is not reversed for heating, but where strip heaters are used during the heating cycle.



For Step Operation of Two Compressors
This arrangement gives step operation depending upon temperature demands, specifically for multiple compressor systems. Gives control by load demands and prevents both compressors from cycling simultaneously.



For Step Operation of Two Heaters
Acceptable wiring for use of C17-100 used to control step heaters in conjunction with heat pump applications or independent space heating. Preset control temperatures cut in auxiliary heating according to temperature drop at inside coil.

For more information about products advertised on this page use Information Center, page 26.

Vital!

Timely!

Exciting!

Everyone looks for news about what's going on in the world.

In the field of air conditioning (which includes heating), nearly everybody in the business follows the news in the NEWS.

Air conditioning and refrigeration people are doing more and more heating work. Heating people are getting into air conditioning. And the term, as well as the function, of "air conditioning" is coming into its own as treatment of air "so as to control its temperature, humidity, cleanliness, and distribution—."

And AIR CONDITIONING & REFRIGERATION NEWS is the only weekly newspaper which covers the *whole field of air conditioning!* It is the most vital, timely, and exciting publication for your advertising message.

Mr. Heating Manufacturer: Take advantage of this new force in your business. Act now! Plan your advertising in the NEWS—the *weekly* newspaper which creates excitement.

AIR CONDITIONING & REFRIGERATION **NEWS**

The Newspaper of the Industry

The newspaper that carries more advertising by far than any other publication in the field.

450 WEST FORT STREET
DETROIT 26, MICHIGAN

NEW YORK, 531 FIFTH AVE.,
MURRAY HILL 3-1926-9, ROBERT M. PRICE.

CHICAGO, 134 S. LA SALLE ST.,
FRANKLIN 2-8095, AL SCHILDHAMMER.

LOS ANGELES, 4710 CRENSHAW BLVD.,
AXMINSTER 2-9501, JUSTIN HANNON.

DETROIT, 450 WEST FORT ST.,
WOODWARD 3-0924, J. B. SULLIVAN.

Selling Builders and Homeowners--

(Concluded from Page 30, Col. 5)

ing is concerned. If there is a better way to build confidence in one's organization I am not aware of it. If you are selling your services and not just taking orders, confidence in your firm is a prime requisite and helps immeasurably in establishing a service reputation.

"Undoubtedly you wonder how Adema's firm can be competitive in new construction work and still have the kind of reputation for service and integrity herein described. The job has been done by careful planning in all phases of business management," Owen explained.

'Buy Right and Right Products'

"Adema says, 'To sell right you must not only buy right but buy the right products.' Through buying the right products and staying with those products, it is less costly to train his man in installing and servicing. This is a cost savings.

Looks for Ideas

"Adema is constantly on the lookout for new ideas and new technologies. If he can purchase quality components at less cost than doing his own fabrication, he does so. He has found that on some items these costs vary depending on manufacturer's inventories. This means keeping himself informed constantly on market conditions. Contacts with his vendors' representatives helps him keep informed. The manufacturers' representatives go out of their way to gather information for him because of his purchases from them regularly.

"Inventories are a cost of doing business. The faster the turnover of capital the lower the cost. Adema rarely has a heavy inventory. Here again planning comes into the picture. By having established his builder contacts he knows how they operate and by close coordination with the builder, he can time his purchases and therefore his deliveries. This means complete coordination of the whole job so that from the start of roughing in, materials flow direct from his suppliers to the job, this is a cost savings," Owen said.

Plans Ahead on Mass Scale

"Adema has applied this same scheduling planning to his labor force. By planning ahead on a mass basis, the installation personnel go direct to the job in the mornings and directly home in the evenings. It is obvious that this kind of operation eliminates the lost time in having personnel report to the operational center morning and evening, and then being scheduled on a daily basis from that point. It is equally obvious that this kind of planning results in cost savings.

"In using all of the know-how he can obtain through being open minded as well as business minded Adema has reduced his total costs and is thus able to sell a quality system to the dealer at a profit," he emphasized.

"When this association started promotion of the perimeter type system Adema became interested. In this system as he studied the information bulletins, he saw the advantages not just from the comfort angle but also the possibility of further standardization. In his planning, standardization was always uppermost in his mind, and here was a means of further reducing his costs. Today all of his installations are perimeter type and he has standardized on runs and all components completely.

Standardizes Runs, Components

"This means one size of take off and two types and sizes of registers, depending on the house construction, thus simplifying purchasing, and fabrication and tends toward further labor cost reduction. Some contractors argue the point but Adema has ample proof that savings are made, since larger rooms simply require more openings rather than larger take offs.

These additional runs add to the quality of his installation," Owen commented.

W. G. Morton, Inc. Joins Heating Wholesaler National Association

COLUMBUS, Ohio — W. G. Morton, Inc., Albany, N. Y., has been voted into membership in the National Heating & Air-conditioning Wholesalers Association, it was announced from the group's international headquarters here.

Specialist in the wholesale coal business for 110 years, the company in recent years started to distribute Mathes air conditioning and now will provide dealers with a complete specialized line of comfort conditioning equipment including furnaces, controls, registers, grilles, packaged ducts, fittings, and space and water heaters, it was pointed out.

Bert F. Dart, sales manager of the Heating & Air Conditioning Div., will represent Morton in the association.

Project Warm Hearted House--

(Concluded from Page 1)

5,000 are in the middle west, 3,000 on the east coast, and more than 2,000 on the west coast.

These 10,000 will have their names listed in a five-page, two-color advertisement in the *American Home* magazine next March. This may be the largest consumer advertisement in the history of the heating industry, Wilson said.

'Provocative Quiz'

The advertisement will feature a provocative quiz by which the homeowner can rate his heating system as "Lovable, Livable, or a Liability" on the basis of whether it provides comfort, whether it is "polite" —that is, clean and odorless— and whether it is easy on the pocketbook.

The quiz gives clues which help tell whether "everybody at home feels at home." The clues are based on home heating standards compiled by Honeywell's home heating expert, Bill Nessel.

$15 Checkup

Via a coupon, homeowners will send the result of their quiz to a participating dealer. He, in turn, will give the homeowner a "$15 checkup" without cost. Participating dealers have agreed to redeem the coupons.

Although it is too late to include additional dealer listings in the advertisement, Wilson stressed the fact that all heating dealers are still eligible to participate.

Honeywell said that any dealer can obtain the complete package of free promotional material for use at the local level.

The project was launched by Minneapolis-Honeywell last November with a special mailing to dealers and contractors. Original equipment manufacturers and others in the industry received copies of the announcements. They were urged to promote the program and urge their dealers to participate.

More than 10,000 dealers, approximately 60 manufacturers, over 200 wholesalers, and several trade associations joined in the campaign.

The campaign, Wilson said, is directed to the more than 20 million homeowners with heating systems more than 10 years old. It is aimed at benefitting everyone in the heating industry by awakening these homeowners to the shortcomings of their present heating equipment and inspiring them to want to improve it.

Helps Push Central Air Conditioning

Many manufacturers and distributors, Wilson added, pointed out to their dealers that Project Warm Hearted House offered an excellent opportunity to push central air conditioning with homeowners.

Inland Empire

Utility Says Electric Heat Sales Maintain High Level In Homes

SPOKANE, Wash. — During November sales of commercial and industrial electric heating totaled 81 in the Inland Empire area, the Washington Water Power Co. reported. Space heating accounted for 70 of these installations.

Electric heat sales also continued at high level in residential areas. There were 163 installations in November, bringing the first 11 months' total to 1,272, WWP indicated.

Approximately 8,500 customers of the utility are using electricity to heat homes, offices, and other establishments, it was pointed out. Many more than that use electric heat for special purposes or to provide extra heating in bathrooms, nurseries, and recreation rooms, the utility noted. A new sales drive will begin in February.

FLO

BANISH MOISTURE IN YOUR LINES . . . PREVENT FREEZE-UPS!

Four Convenient Containers

Flo, the modern chemical dehydrant, travels with the refrigerant and renders damaging moisture harmless instantly.

• Prevents valve freeze-ups. • Stops rust and corrosion — keeps metal parts and oil in top condition. • Checks acid that damages internal parts. • Contains no solids, caustics or acids — leaves no powder or other residue. • Easily introduced into system — on high or low side.

Over 85,000* refrigeration units successfully treated. (*Based upon average unit containing up to 8 lbs. of refrigerant)

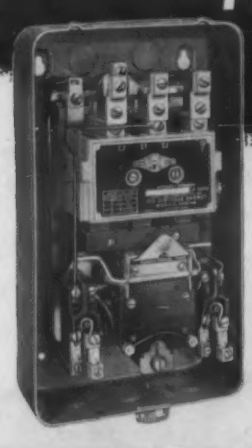
Sold by leading wholesalers everywhere. Send today for Catalog E-57 covering the Allin line.

Allin

ALLIN MANUFACTURING CO.
410 N. Hermitage Ave. • Chicago 22, Illinois
Over 1,000,000 Liquid Eyes Sold to Date!

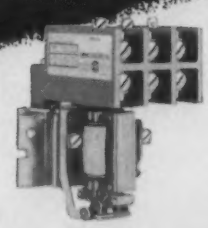
FURNAS ELECTRIC

CONTROLS HELP YOU REDUCE COST AND SPACE REQUIREMENTS



Magnetic Starters in 10 sizes to 100 hp. Furnas starters for control of high horsepower compressors offer the exclusive Furnas "in-between" size starters with dual voltage magnet coils.

For full information write for Bulletin 5610, 1111 McKee St., Batavia, Ill.



Furnas contactors feature 20, 24, 30, 35, 40, and 50 ampere sizes to match starter requirements. Silver cadmium oxide contacts for longer life. Floating armature insures quiet operation.

A43

FURNAS

FURNAS ELECTRIC COMPANY
BATAVIA, ILLINOIS
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

YOU SAVE WHEN IT'S SHIPPED UNCRATED

NEW FIXTURES, REFRIGERATORS AND STORE AND OFFICE EQUIPMENT

HOW IT WORKS

Store, home, institution and office furnishings are more safely and quickly shipped UNCRATED via North American Van Lines, Inc., Creston Division from factory to dealer or user.

YOU SAVE

. . . Crate Material Cost!
. . . Crating Labor Cost!
. . . Crate Shipping Cost!
. . . Excess Labor Cost!
. . . Local Transfer Cost!
. . . Uncrating Cost!
. . . Excess Space Cost!
. . . Crate Disposal Cost!

GET THE FACTS WRITE . . .

North American VAN LINES, Inc.

CRESTON DIVISION
Dept. R
Fort Wayne, Indiana

Gentlemen: Please rush
FACTS & CASE HISTORIES ABOUT UNCRATED SHIPPING.
NAME _____
ADDRESS _____
CITY _____ STATE _____
R

Court Ruling--

(Concluded from Page 1, Col. 2)

of San Francisco vs. Sheet Metal Workers International Association. It upheld provisions of the Taft-Hartley act.

The 9th circuit opinion pointed out that Sheet Metal Local 75 in nearby Marin county threatened to encourage, cause, and induct members of Sheet Metal Local 104 from San Francisco to refrain from performing and to refuse to perform any service by going on strike, in order to collect 2½ cents an hour for Local 75's Joint Industry Board of the Heating & Sheet Metal Industry of Marin, and adjoining counties.

After developing the fact that board members from the union are in fact employe representatives and therefore barred by the statute from receiving money for employe benefit, the 9th circuit opinion concludes "that these payments to the Joint Industry Board fund were unlawful under subdivisions (a) and (b) of Section 302 of the Labor-Management Act."

Two days after the Supreme Court ruling was reported through legal channels, Mechanical Contractors Association of Northern California and Associated Plumbing Contractors of San Francisco notified Joe Mazoola, business agent of United Association Local 38 in San Francisco that they would make no further payments to Local 38's joint industry board.

Refrigeration & Air Conditioning Contractors Association of Northern California, which has also been contributing fringe benefits to the board, indicated arrangements would soon be made to put these funds into a trusteeship.

Settle M-H Row-

(Concluded from Page 1, Col. 2)

Mazzola had demanded the eight instrument men, none of whom have served any time as an apprentice, be immediately given full journeyman status and pay. Settlement provided the eight men be slotted in accordance with the time they have been employed by M-H.

Since the official journeyman designations passed by the U. A. 1956 convention do not make any mention of refrigeration and air conditioning journeymen, the term steamfitter was used in the settlement to describe the new status of the instrument servicemen.

Length of M-H service of four of the instrument men now puts them in the category of steamfitter apprentices. Two others have more than five years and by virtue of the settlement are now full-fledged journeymen.

One has worked four years and eight months for M-H. He is now a journeyman steamfitter.

The other man had limited time with M-H, but has been active in union organization of the instrument men, and now is a steamfitter journeyman.

Cushing said the settlement provides that Local 38 relinquishes its claim on industrial service work. Instrument men who were doing that will now work on commercial work as apprentices or steamfitters, as their time with M-H qualifies them.

UA Asks NAPC for Evidence of Plant Maintenance Worker Encroachment

WASHINGTON, D. C. — Decrying the plumbing and pipefitting industry's loss of work in industrial plants, the United Association of Plumbers and Pipefitters has asked the National Association of Plumbing Contractors to advance documentary evidence of any encroachment by maintenance crafts in the field of new and remodeling work, according to NAPC.

NAPC headquarters has urged its contractors and associations to forward detailed evidence to its office here "at the earliest possible moment."

UA President Peter T. Schoemann is chairman of the jurisdictional committee of the AFL-CIO. Little progress has been reported by this committee in its effort to solve jurisdictional disputes arising from the two unions' merger, it was noted. In some cases, it is claimed, maintenance craft unions have tried to take over new and remodeling work which has been traditionally within the jurisdiction of UA and its contractors.

Request for information of documented encroachments came as a result of a recent meeting of the newly-formed Joint Industry Promotion Committee. This was established Jan. 16 at a joint meeting of UA, NAPC, and Mechanical Contractors Association of America.

NLRB Decision--

(Concluded from Page 1, Col. 2)

the past such cases were automatically dismissed on the basis they should be handled through the industry's own arbitration machinery.

Predicting the ruling "would strengthen the building industry's peace machinery," Jerome D. Fenton, NLRB general counsel, said the board had subscribed to the view of the merged labor federation that all building trades unions were automatically subject to the machinery.

ASHAE, ASRE--

(Concluded from Page 1, Col. 3)

be presented to members attending the joint meeting of the two societies to be held in Minneapolis next June.

The councils will then request approval to submit the proposition to a vote of the membership at the winter meetings of the two societies.

At the ASHAE meeting here Prof. Elmer R. Queer of Pennsylvania State university was elected president for the coming year.

Other new officers are Arthur J. Hess, first vice president; Walter A. Grant, second vice president; John H. Fox, treasurer.

FHA Loan Rules--

(Concluded from Page 1, Col. 5)

ing features," Connor said.

"However, installations in new structures should evidence a coordination of the location, size, and shape of the unit with the window or construction in which it is used to obtain the architectural detail and appearance appropriate to the property under consideration.

"Obstruction of required natural light should be avoided.

"The inclusion of room air conditioners as part of the security for long term mortgage insurance dictates that the installation of such units and adjacent building elements be structurally durable and present an appearance consistent with the architectural character of the structure."

Talk on Perimeter Cooling Featured by Detroit ASRE

DETROIT — "New Thoughts on Perimeter Air Conditioning" will be the featured talk at the local American Society of Refrigerating Engineers section meeting Feb. 3 in Rackham Memorial Bldg.

Fred C. Wood, local York Corp. manager, will explain his firm's ideas on perimeter air conditioning at 8:30 p.m. following dinner at 6:30. Social hour is from 5 to 6 in the Sapphire Room of the Park Shelton hotel.

AAF Purchase--

(Concluded from Page 1, Col. 3)

Kennard was chartered in 1934 and its founder-president is 47-year-old Sam M. Kennard III. It employs 200 persons in its new 100,000-sq. ft. plant in a suburb of St. Louis. Its products are sold by representatives located in 40 cities throughout the country.

The acquisition of Kennard, according to Frank, will enlarge AAF's line of products.

Jarvis Closes Tour Of Schools, Societies

LOS ANGELES—In conjunction with Recold Corp.'s educational public relations program, Hal Jarvis, advertising manager, has launched the firm's 1958 schedule of visiting chapter meetings of professional societies and trade schools with a special presentation from Recold.

Jarvis will conclude his six weeks' trip to the southern and eastern sections of the nation by appearing before the Birmingham chapter of Refrigeration Service Engineers Society on Feb. 7.

He was also a guest of RSES chapters in Buffalo and Miami, Fla.

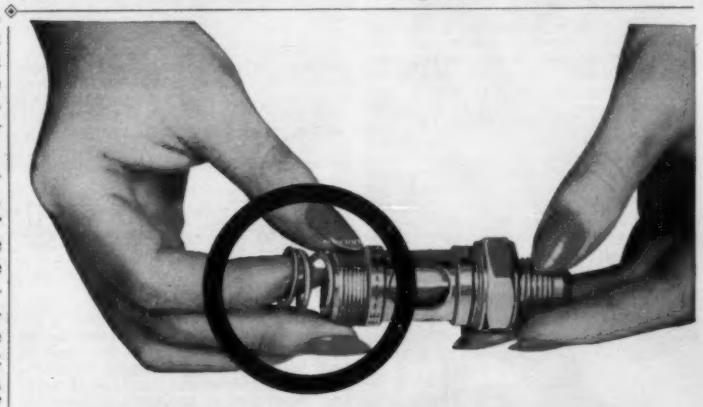
Ideal Cooler Appoints Goodwin Chief Engineer

ST. LOUIS—J. Bernard Goodwin has been appointed chief engineer of Ideal Cooler Corp. here, it was announced by Louis Weiss, president.

J. B. Goodwin

Goodwin will concentrate for the present on the design and development of a number of new refrigeration equipment items which the firm plans to introduce shortly. Among these are several models of pre-mix dispensers.

Goodwin was with Hussmann Refrigerator Co. 28 years.



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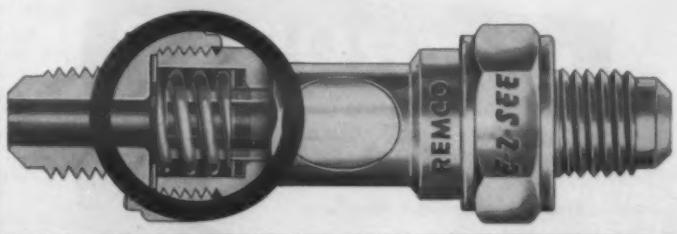

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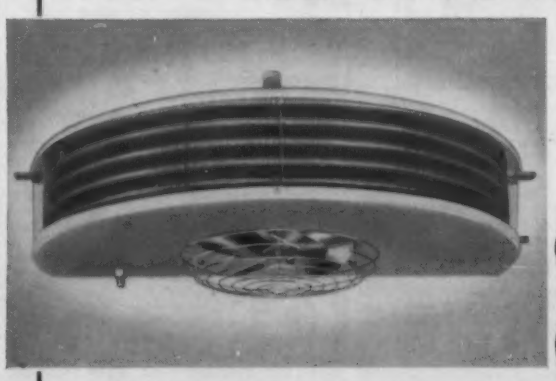

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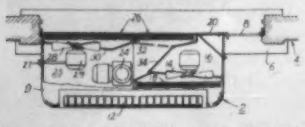
PATENTS

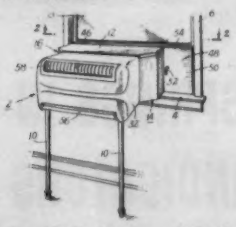
Week of October 22 (Continued)

2,810,273. AIR CONDITIONING UNIT. Emanuel Bilgrei and Anthony Urban Zimmermann, Brooklyn, N. Y.



In a self-contained air conditioning unit, the combination of, a casing construction which is adapted to be positioned upon a window sill with one face thereof in substantial alignment with the window, a first chamber through which air passes to be cooled, a second chamber through which air passes for dissipation of heat to the outside, said chambers positioned in substantial alignment along said one face whereby they are positioned side by side in the window, a refrigeration system having a compressor positioned substantially centrally within said second chamber; and an evaporator positioned parallel to said one face along the opposite face of the unit, a first fan and motor positioned to direct air through said evaporator from said first chamber and thence into the room, said refrigeration system also including a condenser positioned along said one face substantially throughout the extent of said second chamber and having baffle means dividing the portion of said condenser at one end of the unit from the remainder of the condenser. . . .

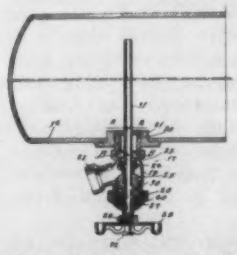
2,810,335. AIR CONDITIONING WINDOW MOUNTING DEVICE. Emanuel Bilgrei, Brooklyn, N. Y.



In self-contained air conditioning apparatus, an air conditioning unit having a casing with an air discharge opening along one side thereof which may be positioned substantially at the plane of a window, said casing having air inlet openings at the side walls adjacent the first-mentioned side, means for forming air passageways comprising a pair of cowls positioned respectively at said air inlet openings, each of said cowls being formed by a wall structure which is spaced from its air inlet opening and which is flared inwardly toward and to the side wall of said casing to form an air passageway. . . .

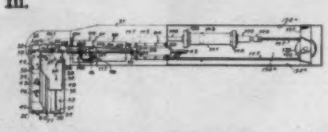
2,810,396. DRAIN AND VACUUM BREAKER VALVE. Gilbert F. Carlson, Skokie, Ill., assignor to Bell & Gossett Co., Morton Grove, Ill.

A drain and vacuum breaker valve for use with a tank, said valve including a casing having an inlet adapted for connection to said tank, a drain branch, a circular valve seat coaxial with said inlet and located between



said inlet and drain branch with said seat facing away from said inlet, and internal threads coaxial with the valve seat proximate the end of the casing opposite to said inlet, a hollow valve member having external threads mating with said internal threads and adapted to move the valve member axially upon rotation of said valve member toward said inlet and toward closing position, said valve member also having a valve head at its inner end adapted to register with said valve seat. . . .

2,810,422. TUBE BENDING MACHINE WITH MECHANISM FOR CONTROL OF WALL THICKNESS ACTUATED BY THE ROTATABLE BENDING DIE IN ACCORDANCE WITH ITS SPEED OF ROTATION. Byron P. Bower, Aurora, Ill., assignor to Pines Engineering Co., Inc., Aurora, Ill.



3. In a tube bending machine, a rotatable bending die, a gripping means adapted to grip tubing to the die and turn with the die, a pressure die mechanism supporting tubing against pressure developed at the point of bending, a mandrel adapted to be positioned axially within the tube to prevent the collapse of the tube at the point of bending, a tube engaging and feeding means movable axially of the tube, said means securely engaging the tube to positively feed it axially toward the bending die, hydraulically operated means operating the tube engaging and feeding means, valve means for said hydraulically operated means carried by the tube engaging and feeding means, a control arm for said valve means and means actuated by the rotatable bending die for moving the control arm as the bending die rotates so that the control arm means is actuated in accordance with the speed of rotation of the die.

2,810,493. VACUUM RELEASE MECHANISM FOR REFRIGERATED CABINET. Robert L. Eichhorn and Richard D. Verdick, Evansville, Ind., assignors, by mesne assignments, to Whirlpool-Seeger Corp., a corporation of Delaware.

In a combined refrigerator latch mechanism and air pressure release, the combination of a hook shaped latch strike to be carried by a refrigerator adjacent a door opening, said strike having a transverse retaining shoulder

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

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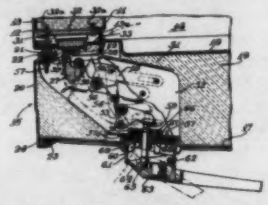
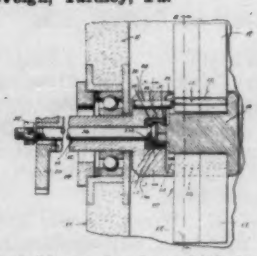
and a beveled camming surface, with a latch and pressure release mechanism, comprising a support to be carried by the door, said support having a pivoted latching lever provided with a roller for engaging said beveled camming surface on said strike, to retract said roller, and said roller also being located to engage behind said transverse shoulder to hold the door closed, a handle lever pivotally mounted on said support, and having a handle end to move in the door opening direction to release said latch, a slidable plunger extending through said support for actuating said latch, said plunger being engaged at its outer end by a part on said handle to be moved inward to unlatching position. . . .

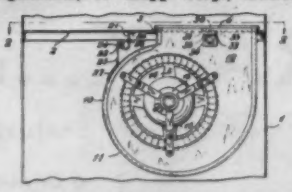


2,810,513. BLOWER FANS. John R. McVeigh, Yardley, Pa.



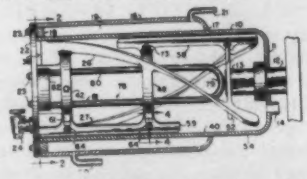
1. A blower fan for a high temperature furnace or other similar application and comprising a fan hub constructed of a bonded carbide material, fan blades of an extruded bonded carbide material and secured to said hub and extending radially with respect thereto, said hub structure and fan blades being resistant to relatively high temperatures, a drive shaft for said blower fan and adapted to extend through a wall of said high temperature furnace and having an enlarged flange provided with an inner machined end face provided with a recess, said flange and face disposed interiorly of said furnace, means securing the hub to said drive shaft and means drivingly connecting said hub and drive shaft to directly transmit driving torque, said securing means comprising an axially disposed undercut button extension carried by the hub, an adjustable lock bolt axially carried by said drive shaft and having an enlarged flange on the end thereof. . . .

2,810,514. SUPPORTING AND POSITIONING MEANS FOR BLOWERS OR THE LIKE. Malcolm W. Patrick, Northfield, Ohio, assignor, by mesne assignments, to Hupp Corp., Detroit.



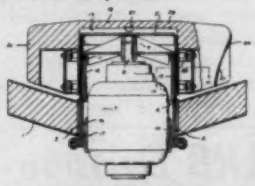
1. In a blower installation, the combination with a substantially horizontal wall having a rectangular aperture, of an elongated supporting member secured to the underside of said wall and depending therefrom and terminating at its lower end in a laterally and thence generally upwardly extending fulcrum that extends lengthwise of said member and is disposed in spaced substantially parallel relation to a side of said aperture, a blower casing of the scroll type including end walls and a peripheral wall, the corresponding edge portions of said walls defining a rectagular outlet extension of the casing, an elongated supporting member secured to the peripheral wall of the casing and rising therefrom and terminating at its upper end in a laterally and thence generally downwardly extending rocker portion that extends lengthwise of the member. . . .

2,810,527. TEMPERATURE AND PRESSURE RELIEF VALVE. Erich W. Work, New Britain, Conn.



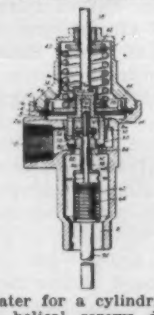
10. A temperature and pressure fluid relief valve assembly comprising a body having an inlet and an outlet, a pressure responsive main valve for impeding flow of fluid between the inlet and outlet, an annular recess in said body, said main valve extending axially into said recess, a piston in said recess carrying said main valve for movement thereof in response to fluid pressure acting between said body and one side only of the piston, a fluid passage in said main valve for the connection of said one side only of said piston with said inlet, an auxiliary valve carried by said main valve and disposed in said passage. . . .

2,810,556. AGITATORS FOR FLUID COOLING TANKS AND THE LIKE. Igor V. Zozulin, Vancouver, British Columbia, Canada, assignor to Tormag Transmissions Limited, Vancouver, British Columbia, Canada.



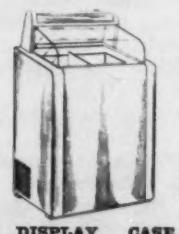
1. A magnetically driven agitator comprising a substantially non-magnetic stationary cylinder mounted on the bottom wall of a liquid containing tank, a cylindrical rotor of non-magnetic material of high electrical conductivity journalled vertically within the stationary cylinder, means for rotating the cylindrical rotor, a magnetic rotor in the form of an annulus adapted for rotation about the stationary cylinder. . . .

2,810,557. FREEZER MECHANISM. Louis A. M. Phelan, Rockton, Ill.



1. A beater for a cylindrical freezer including, helical screws disposed in circumferentially spaced relationship and having front and rear ends, a front ring rigidly secured between and adjacent the front ends of said screws, an intermediate ring rigidly secured between said screws intermediate their length, a rear member rigidly secured between and adjacent the rear ends of said screws and having means forming a driving connection. . . .

DESIGNS



181,258. DISPLAY CASE FOR FROZEN FOODS OR THE LIKE. Frederick J. Kuhn, Detroit, Mich.

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WANTED EXPERIENCED sales engineer, salary and expenses. CENTRAL ICE MACHINE COMPANY, 5014 South 24th Street, Omaha, Nebraska. Phone Market 4690.

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COMMERCIAL REFRIGERATION and packaged air conditioner service mechanic. Must be experienced. Steady work for qualified man. Paid vacation, hospitalization and uniforms. Company located northern New Jersey. In reply, give full experience and qualifications. BOX A5966, Air Conditioning & Refrigeration News.

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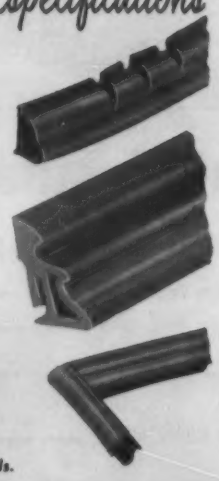

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Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Buick auto air conditioner is the thirteenth make to be discussed in this series. Makes previously described were A.R.A., Artic-Kar, Frigette, Frigikar, Kauffman, Mark IV, Airtemp, Mobilette, Novi, Vornado, Polar-Temp, and American Motors.

BUICK (3)

Controls (Cont.)

Buick Motor Div.
General Motors Corp.
Flint 2, Mich.

Control panels of the 1956 and 1957 Buick units differ somewhat.

The 1956 panel (Fig. 7) has the windshield defrost control knob on the extreme left, the two-speed blower control on extreme right. At top center is the heater and air conditioner air control, which also turns the magnetic clutch on or off. Heater temperature control lever is on the lower left. On the lower right of the panel is the air conditioner temperature control lever (connected to the by-pass valve).

To operate the 1956 Buick conditioner, first make certain the left fresh air vent control (to left of steering wheel column) and defroster control (on control panel) are both closed.

Lower left lever (heater control) is moved to "off" (extreme left).

Upper air control lever is moved to extreme right. This closes center heater vent, opens right dash vent valve, and energizes magnetic clutch.

Turn on blower control (right side of control panel).

After system has operated a few minutes, move lower right temperature control lever to obtain desired temperature. Coldest temperature results when this lever is at extreme right.

If dehumidification without cooling is desired, move lower left heater temperature control toward the right until desired car temperature is obtained, the cooling system being in operation as described above.

The 1957 Buick air conditioning controls (Fig. 8) are clustered on the instrument panel to right of steering column.

Lever on left controls amount of cooling effect by changing setting of hot gas by-pass valve. Maximum cooling is obtained with this lever in the full down position.

Lever on right controls car heater temperature. Maximum heating is obtained with this lever in full down position. In "off" (full up) position, flow of water through heater-defroster core is stopped.

In center of panel is a rotating air control lever which also turns the magnetic clutch on or off.

Two-speed blower control is mounted on center of air control lever.

To operate the 1957 Buick air conditioner, first make sure that the left fresh air vent control (to left of steering column) is closed and that the heater lever (right) is in "off" (full up) position.

Rotate center air control lever full clockwise to "Air Cond.-On" position.

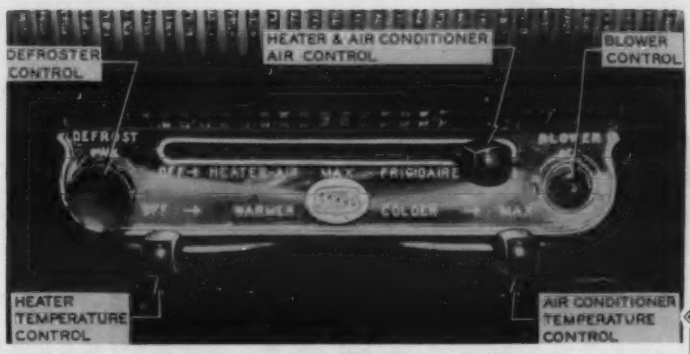

FIG. 7—Control panel of 1956 Buick conditioner.

FIG. 8—Control panel of 1957 Buick unit. (1) cooling control lever connected to by-pass valve; (2) lever that positions air valves and energizes magnetic clutch circuit; (3) blower control knob; (4) heater control lever.

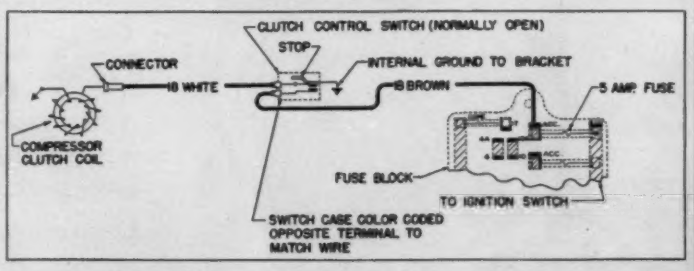

FIG. 9—Magnetic clutch wiring on 1956-57 Buick system.

Start engine and adjust "Cold Range" lever (on left), blower speed, and air outlet direction to obtain desired temperature and air distribution.

Dehumidification without cooling is obtained by operating air conditioning system as above but with heater temperature control lever positioned to obtain desired temperature.

Wiring

Wiring diagram of the compressor magnetic clutch circuit is shown in Fig. 9. This diagram applied to both 1956 and 1957 Buick air conditioners.

SERVICE HINTS

Evacuating System

When a system is first installed, or if the system has been opened to perform service operations, it must be evacuated to remove air and moisture. Buick recommends the use of a vacuum pump to evacuate its 1956-57 systems.

The system should be pulled down to at least 26 in. of vacuum with the vacuum pump. If 26 in. vacuum can't be reached, there is a leak in the system. The leak will have to be found and repaired before proceeding with evacuation.

Vacuum of 26 in. or more should be maintained for 10 minutes, Buick advises. The vacuum is then broken with Refrigerant-12, following which the system is again pulled down to 26 in. or more and held there for another 10 minutes. The system is now ready for charging.

If a vacuum pump is not available, the compressor itself can be used to evacuate the system on '56 models only, but Buick cautions that this method will not remove moisture from the system.

The car engine should be operated at low idle (450 r.p.m.) with the controls set for maximum cooling and the blower on high speed. System should run for five minutes and achieve a vacuum of 25 in., which should hold for 10 minutes after the engine is stopped.

Vacuum should be broken with Refrigerant-12 and the system again pulled down to 25 in. for five minutes.

When using the compressor to evacuate, a bottle or suitable container should be provided in place of the vacuum pump to collect and measure amount of oil pumped out of the system. An equal amount of clean Frigidaire 525 viscosity oil must be added to the system following evacuation.

Charging System

Refrigerant-12 is employed in Buick air conditioners. Charge is 5½ lbs. in 1956 models, 5 lbs. in 1957 models.

Buick systems are charged with refrigerant vapor through the low side in the conventional manner.

(To Be Continued)

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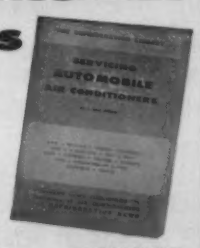

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